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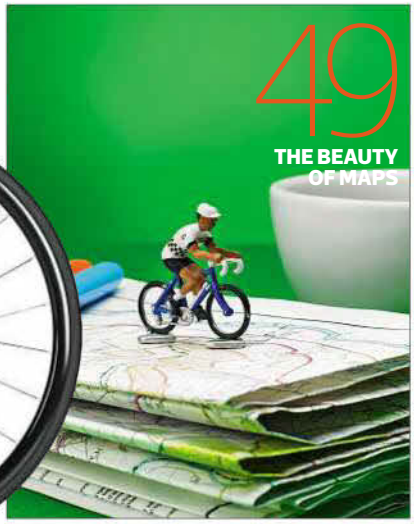
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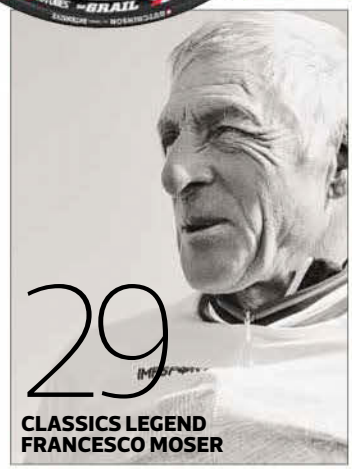
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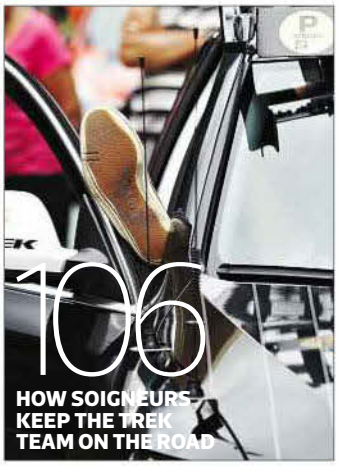
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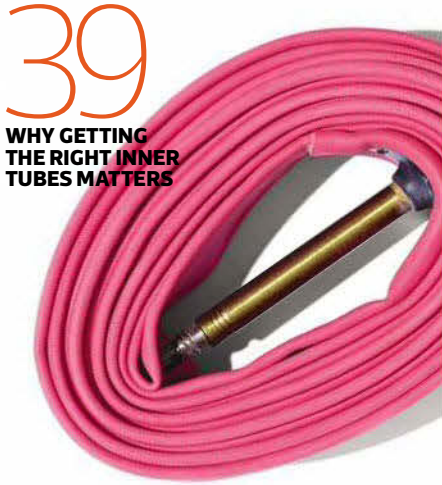
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ED'S LETTER



Photo Jordan Gibbons

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Six-day racing was invented in London in 1878, and returned this October after a 35-year hiatus

If the doom-mongers are to be believed, we are about to experience the worst winter since records began (or at least since 2010, depending on which newspaper you read). El Nino is on its way, and apparently the whole country is going to be buried under snow, which will be great for sledging but not so good for bike riding.

The hardcore among us will simply afix some knobbly tyres and head out for the usual Sunday training loop, skidding around the lanes and muttering about how Bernard Hinault wouldn't wuss out of a ride just because his fingers were falling off from frostbite. For me, however, the prospect of detached digits is enough to make me leave the bike in the shed and seek alternative ways of getting my cycling fix. And I think I may have discovered just the thing.

I recently had my first taste of track cycling at London's Olympic velodrome, and loved every minute of it. Not only does it offer the chance to learn some new skills, it makes for a great way to stay in shape over the winter. It's certainly a refreshing change from staring at the kitchen wall while dripping sweat onto the lino during a turbo session. What's more, now is the perfect time to get to grips with track cycling as it is experiencing something of a boom in Britain. London has just witnessed the return of six-day racing for the first time in 35 years (see p43), the Revolution series is getting bigger than ever and now has decent TV coverage, and the upcoming Olympics is certain to see an explosion of interest in the sport as the likes of Bradley Wiggins and Laura Trott look to increase their medal haul.

Come the spring, it will be all about the road bike again, but while the snow falls, you should consider taking to the boards.





Pete Muir, Editor

Now is the perfect time to get to grips with track cycling as it is experiencing something of a boom in Britain





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***Cyclist* visits the workshop of DeAnima in Italy, where modern materials meet old-fashioned principles**



Photo **Fred MacGregor**

Cyclist

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Venge is sweet

Specialized's fastest bike just got faster

Words **SAM CHALLIS** Photography **JENNI LESKINEN**

Specialized Venge ViAS

The bike industry is accustomed to product evolution through small steps. When a new model of a bike comes out, it's often pretty similar to the previous model, with a tweak to the geometry here, or a slight change to the lay-up there. It's rare for a brand to unveil an update to a bike that represents a giant step in design and technology, which is what makes the new Specialized Venge ViAS so exciting.

Unleashed at this year's Tour de France, the ViAS is Specialized's first substantial revision of the Venge since its inception in 2011. It looks significantly different to previous Venges, and its creation required Specialized to bring together all its different divisions.

'We applied all three arms of our research and development capability to design the entire bike system: computer simulation, lab and wind-tunnel testing, as well as on-road data acquisition testing,' says Chris Yu, the man in charge of Specialized's aero and racing R&D team. 'We used computer simulation in both the aero optimisation of tube shapes as well as in the optimisation of the carbon fibre layup. We then tested numerous prototypes in our own wind-tunnel as well as in our structural lab. Finally, we collected actual ride data to assess both the aerodynamic and ride quality attributes of the system.'

All aspects of the bike were designed in unison, and Yu claims the result is that the ViAS is two minutes faster over 40km than a 'normal' bike, and 60 seconds faster than the previous Venge. One of the most distinctive aspects of the design is the gull-wing bar shape, of which Yu says, 'We found in our wind-tunnel testing that there was a significant aero benefit to a level stem.

Specialized Venge ViAS, £9,000, specialized.com

That meant we needed a way to get the handlebars back to where a rider would expect when using a traditional (eg -6°) stem. Rather than using spacers, which are relatively inefficient even when aero shaped, we found that getting the additional rise using the aero section in the handlebar resulted in minimal additional aero drag. As a result, the ViAS stem and bar combination achieves the same fit range as a traditional angled stem and flat bar but at a significant aero advantage.'

Braking new ground

Brake type and position are among the most controversial alterations to the Venge. The front brake is situated high, behind the fork crown to ensure it has a stable mounting base. 'This balances aero performance, fork stiffness, as well as brake performance ,' says Yu. 'Many integrated V-brake designs



compromise fork leg stiffness and as a result compromise the front end handling of the bike. An additional benefit of this orientation is that it allows a continuous surface from the back of the fork crown into the down tube, smoothing airflow.

The rear brake is situated part way up the seat tube, which Yu says is the lowest aero drag position when racing with bottles, while also being the location of minimal deflection between the rear wheel and the frame. 'This results in reduced brake rub in sprint or high power climbing scenarios, to increase efficiency,' says Yu.

'The ViAS stem and bar combination achieves the same fit range as a traditional angled stem and flat bar but at a significant aero advantage'

The ViAS is the first bike where Specialized has brought in-house the carbon composite techniques that its partners at McLaren use. To accommodate the novel internal cable routing system (no cables are on display) and dramatic aero tube shapes, new construction methods were used to package everything efficiently.

'There are several features that address ride compliance, most notably the optimisation around wider [24mm front and 26mm rear] tyres. We designed a whole new wheel, the Roval CLX64, around wider tyres, which in turn served as the foundation to the ViAS design. By doing so, we were able to preserve aerodynamic performance while offering compliance and handling advantages that come with wider tyres,' says Yu. 'In addition, we found that the dropped seatstays not only improved aerodynamic performance, but also improved rear-end compliance.'

Having made so many changes, is Yu happy that the ViAS is a success? 'We have tested the ViAS against almost every form of road platform available on the market. We've found that the ViAS represents a new class of aero road bike with performance on par with the majority of time-trial bikes today.'

A bold claim indeed, but we'll reserve judgement until we do a full test in a future issue of *Cyclist*.



Altura Night Vision kit

£59.99 (jersey), £69.99 (bibs), £34.99 (gloves), zyro.co.uk

Altura has spent the past 20 years perfecting the art of visible clothing for the commuter, and now it is incorporating that knowledge into its ever-growing road range.

'We're keen on progressive sport technology, and we're working towards the best visibility in low light conditions on the market,' explains Altura brand director Clint Vosloo. Using what Altura calls Flow Zone reflectivity technology, the new kit claims a full 360° range of visibility. 'With the Night Vision technology, we work on being totally visible from any angle within a 30-metre range because that's how far a car's headlights project,' says Vosloo.

This is all part of the brand's effort to create increasingly technical clothing to accompany its customers as they move from commuting into serious road riding. The Peloton Night Vision jacket and bibtights (pictured) use Altura's Thermo fabrics that are designed to preserve warmth with a mildly fleecy but breathable inner material. Both pieces feature Altura's 3D fit, and are cut for a racy cycling position. Proof that functional and fetching kit doesn't have to cost the earth.



Quarq Riken AL power meter

£639, quarq.com

With all the new power meters coming onto the market, it's easy to forget the old players of the power game, but they haven't forgotten you. Quarq has been lowering its prices substantially to compete with the newcomers, and its new Quarq Riken AL comes in at a friendly £639.

'The crankset spider [the plate beneath the chainring] is certainly the most accurate place to measure power because every bit of effort that you're putting out goes through the crankset spider to drive the bike forward,' says Troy Hoskin, Quarq product manager.

Established in 2007, Quarq has been much used in the pro peloton, but while pros use the top level Sram Red or Elsa systems, Quarq introduced the more affordable Riken R range a few years ago by sacrificing a little on materials. With this even more affordable Riken AL, Quarq has used an aluminum crank rather than a carbon crank, as seen with the Riken R. That adds 160g of weight (818g in total) but brings the cost down to a point competitive with the entry level of the power market. It's available in both 130 and 110BCD and is compatible with both 10 and 11-speed drivetrains. Battery life is a claimed 300 hours from a single CR2032 coin cell battery.



Fulcrum Racing Quattro Carbon wheels

£1,200, i-ride.co.uk

Fulcrum's new carbon wheels aim to bring cutting-edge technology to the masses. 'Our new concept, #fulcrumfast, wasn't intended to apply only to those who have team cars following them, but also to those with the same performance expectations despite a more modest budget,' says Joshua Riddle of Fulcrum's parent company, Campagnolo. 'Our Quattro Carbons were designed with this in mind.'

The Quattros are made from unidirectional carbon fibre and include the same 3Diamant treatment on the braking surface found on Fulcrum's top-end wheels, for consistent braking.

'The Quattro name derives from the versatile rim depth of 40mm – it offers both aerodynamic advantages as well as a low rotational mass,' says Riddle. The rims have also been widened in accordance with current trends, and in terms of weight they cede just 140g to the equivalent Enve wheels despite being half the price.

Look out for a full review in an upcoming issue.

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Bollé The One Premium helmet

£109, bolle-europe.co.uk

French brand Bollé is a big name in the helmet and sunglasses business, but its focus has been mainly on snowsports until now. While it has provided sunglasses for pro teams Orica-GreenEdge and AG2R for some time, this is its first foray into helmets for cyclists.

Bollé has aimed to pack as many features as possible into The One, with the view that it should be the only helmet you need, whether you're racing or cruising, on-road or off-road, riding in summer or winter, at night or during the day.

The most noticeable feature is the removable panels at the front and rear, which mean you can switch between a smooth aero shell or a well-ventilated option. At the front is a pair of holes that Bollé calls the 'sunglass garage' – somewhere to park your shades while you're not wearing them. At the rear, there's a removable touch-sensitive light for night riding, while other accessories include a clip-on peak for forays off-road and a thermal liner for when the temperature drops.

It's not the lightest of helmets (348g for a medium), nor does it profess to be the most aero, but it could lay claim to be the most versatile.

Wahoo Tickr heart rate monitor

£49.99, uk.wahoofitness.com

The company with an aversion to 'e's has now produced the Tickr, a heart rate monitor that's more than just a dumbwaiter for your pulse data. Via Bluetooth and ANT+, the Tickr connects to popular fitness apps so you can use it to train with your smartphone. As well as this, its built-in accelerometer picks up your heart rate while monitoring exercise time, distance, pace and calories burned as a standalone device, without the need for a smartphone. Be still my beating heart.





Cateye Volt 1600 front light

£189.99, zyro.co.uk

Every year front lights get more compact yet still seem to chuck out more and more brightness. The debate continues as to whether a light can be 'too bright', but that depends on how and where you use it. Cateye's latest fully integrated light (no separate battery) is barely bigger than a bar of soap, yet will illuminate the road ahead with 1,600 lumens for two hours. Switch it down to 500 lumens and you'll get five hours of light, or 15 hours on the 200 lumen setting, which is still more than enough to make you very visible in built-up, lit areas.

Giant Surge shoes

£199, giant-bicycles.com

For years now cycling shoe manufacturers have strived to produce stiffer and stiffer soles, believing complete rigidity affords the rider optimal power transfer. With its new Surge shoes, Giant is challenging this school of thought.

'With help from biomechanics experts, Giant has developed the Motion Efficiency System that is incorporated in the Surge. It combines a stiff and efficient pedalling platform with just enough torsional flex to reduce pressure and strain. The result is a more natural foot movement during the pedal stroke, which improves both comfort and efficiency,' says Giant's global marketing manager, Jeff Schneider.

The shoes were created using technologies that sound like they have been lifted straight from an *Avengers* film. The ExoBeam is a bar of carbon running the length of the foot to promote stiffness down the shoe, but is mated to a footprint-shaped carbon base that allows some torsional flex in the midsole. 'This is used in conjunction with the ergonomic ExoWrap upper to create a 360° foot enclosure, in theory negating the need for insole arch support,' says Schneider. Rumours abound that Giant is working with Tony Stark to produce an ExoSuit to accompany the shoes.



Otto Design Works Tuning System

$39 (about £25), ottodesignworks.com

Here to shed some light on the dark art of gear set-up is the Otto Tuning System. Showing that there really is an app for practically everything, the Otto App pairs with your iPhone camera and uses two specially designed gauges, first to check the accuracy of your rear derailleur adjustment, and then to talk you through tuning your gears to perfection in just a few simple steps. Mechanics step aside.





Schwalbe Pro One tubeless tyre

£56.99, schwalbe.com

We've tried pretty much every tubeless road tyre going at *Cyclist* (and had our faces covered in exploding liquid latex to prove it), but none has been easier to install than the Pro One. Then there's the ride quality. At a claimed 255g for a 25mm tyre (70g lighter than the original One tubeless) the Pro One has an inherently zippy, floaty feel over uneven ground coupled with excellent adhesion through corners. It's a sublime tyre to ride, and all with the added puncture-protection benefit of going tubeless.


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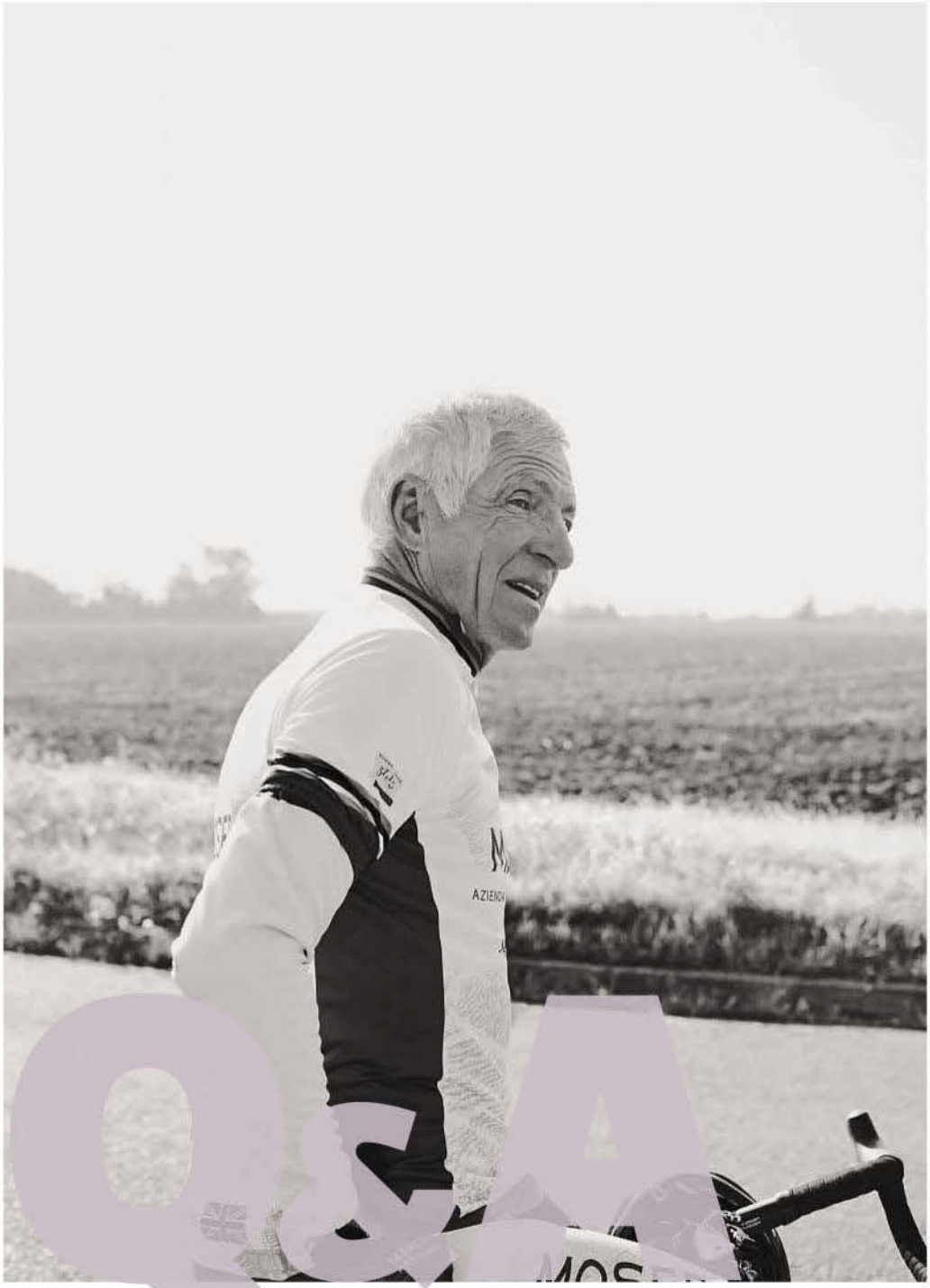
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Francesco Moser

Only four riders have won more pro road races than Francesco Moser. *Cyclist* talks to the Classics legend, Giro d'Italia winner and one-time Hour record holder

Words **OLLIE GILL** Photography **FRED MACGREGOR**

Cyclist: You had many successes throughout your career. Which ones really stand out for you?

Francesco Moser: The Giro d'Italia in 1984 was special of course, but I'm also very proud of the Hour record. Then there was the win at Il Lombardia in 1978 and what it meant in terms of the Pernod Super Prestige [the season-long points competition that ran until 1988]. I'd raced most of the Classics that year as well as the Giro with the focus on winning the Super Prestige, but I was behind Bernard Hinault in the rankings going into the Lombardia. I knew I only needed to come third in that race to take the Super Prestige, but it was even better that I won the sprint for the line.

Palmares
Il Lombardia (1975, 78)
Road Race World Champion (1977)
Giro d'Italia (1978)
Paris-Roubaix (1978, 79, 80)
Gent Wevelgem (1979)
Tirreno-Adriatico GC winner (1980, 81)
Milan-San Remo (1984)

Cyc: Who was your biggest rival during your career?

FM: I had several high-profile rivals, but Giuseppe Saronni was the biggest of them. This wasn't because he was necessarily the best rider I rode against, it was more that he was Italian as well. This made it a special rivalry and one that the press built up. It seemed to divide the whole nation in terms of who the general public supported.

Cyc: Despite all this success, you only rode the Tour de France once. Why?

FM: It was really important for the team and the sponsors that I rode the Giro above all else, which made it very hard to ride the Tour de France as well. We did ride it once in 1975 when the team skipped the Giro. I won the young rider's competition, as well as two stages, but it caused some friction between the team and the Giro organisers. It was always my intention to do the Tour de France again at some point.

Cyc: But you didn't...

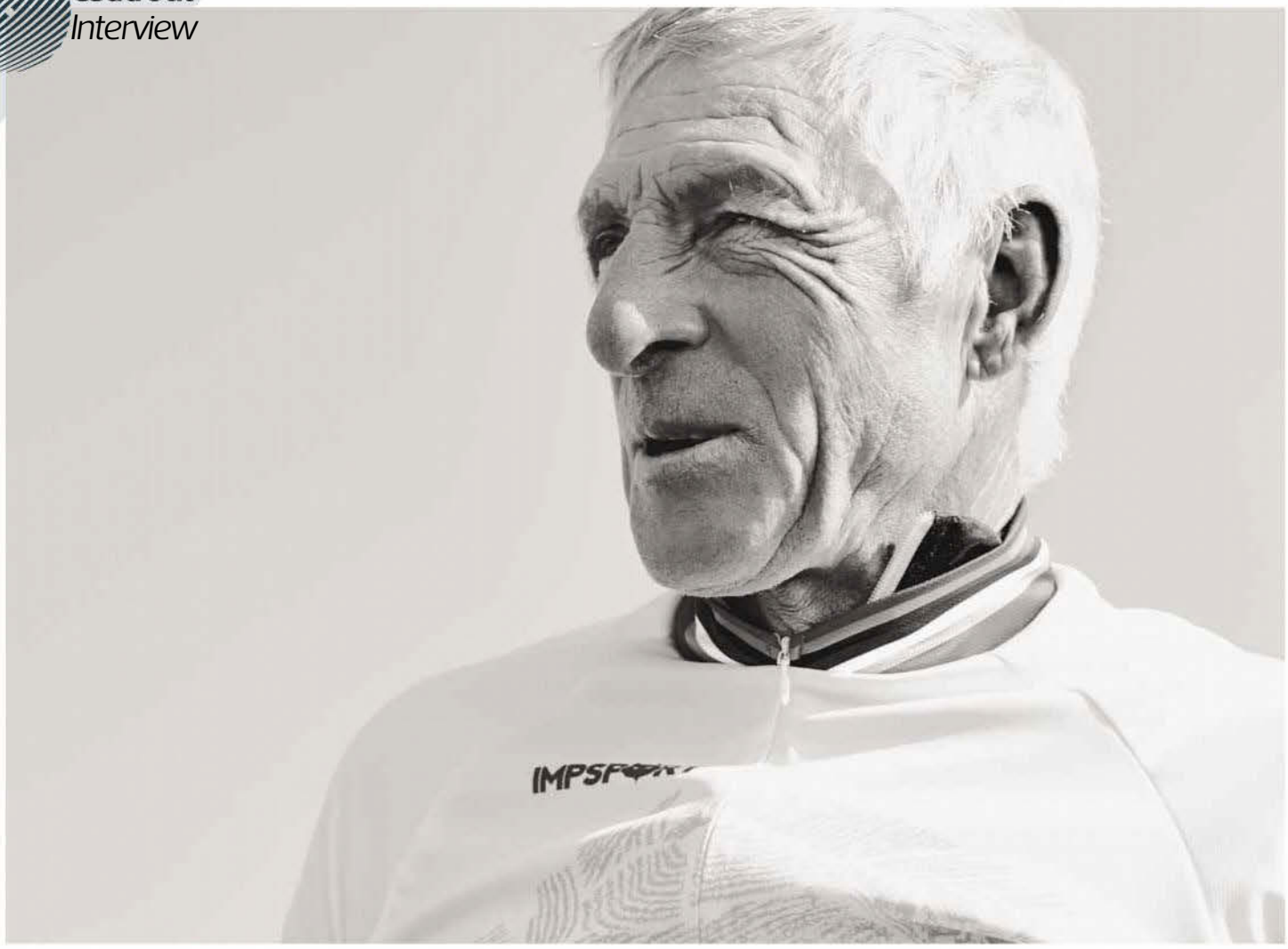
FM: You have to remember that for me Grand Tours were, in general, of less importance than the Classics, so fitting it in was always going to be tricky. And I wasn't going to turn up at the Tour de France to take part and not try to win.

Cyc: Do riders have it easier today?

FM: It was different when I was racing, not necessarily harder or easier. For a start the season was longer when I raced, and stages were generally longer as well. The Classics are pretty much the same, but we didn't race at the same intensity that the peloton does now.

Cyc: Nutrition is a high priority for riders today. What was it like in your day?

FM: In Italy, diet has always been important and the Mediterranean diet gave me an advantage over my rivals. These days, riders take a lot more supplements which means, nutrition-wise, it's a much more level playing field as they all have access to them.



Cyc: Which of today's professional riders do you most identify with?
FM: That's a hard question. In my day, we rode every event to win. Cancellara is someone I can identify myself with because of his successes in the Classics. But then he doesn't necessarily come to the start line of Grand Tours with the intention of winning them. So if we take someone who can win both Classics and Grand Tours, I would say Valverde is probably more like me in that regard.

Cyc: You grew up in a big family on a farm. Did that help your cycling?
FM: When I was young there were always family members around me on bicycles. As for the farm, our vineyards have steep sides, and in those days we had no machinery and needed to work with our hands. This made me very fit from an early age. I quit school at 14 and worked on the farm until I was 18, when I started racing properly as an amateur. Even then, for the first couple of years I continued working on the farm. Farming is still a hard life, but at least now there are machines to help you out.

'Wiggins is a tall rider and he would benefit from a longer bike, which he can't have – so the rules benefit shorter riders. I think that bike geometry should be based on rider size'

Cyc: As a former holder of the Hour record, what's your view on the UCI's decision to allow more aerodynamic bikes?
FM: Well, they seem to have gone back on many of the restrictions that they put on bikes. But there are still limitations that don't quite seem right. Take Wiggins, who is a tall rider. He would benefit from a longer bike, which he can't have – so the rules benefit shorter riders. I think that bike geometry should be based on rider size.

Cyc: What do you think about the boom in British cycling?
FM: The growth of cycling in the UK is great for the sport, but it's not only happening in Great Britain. In Italy there has always been considerable interest in cycling, but in the 1970s and 1980s there weren't that many people actually doing it. These days I see so many more people in Italy out cycling. It's quite an incredible sight. More importantly, there are a lot more women taking it up than ever before, and this extends across all disciplines, not just road cycling.

Moser attributes some of his strength on a bike to his farming past: 'In those days we had no machinery and needed to work with our hands'

Cyc: When you aren't on your bike, what other sports do you like?
FM: I love skiing in the winter – where I live in the Dolomites is a fantastic location for it. I used to do a lot of cross-country skiing as that would be great for training, but now, for me, it's all about downhill skiing. I'm good friends with [ex-pro ski racer] Gustav Thöni and it's great to get out on the slopes with him. We also have Norwegian skiers to stay on the farm when they are training. Aksel Lund Svindal [downhill ski racer] comes over and enjoys the cycling too. Other than that, there's golf, but that takes too long to get good at. I'm just not that patient!



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GIANT

Does the cold give you a cold?

'It's freezing out there, you'll catch your death!' Granny used to say as you set out on your bike. But was she right?

Words **MICHAEL DONLEVY** Illustrations **ROB MILTON**





The clue is in the name, you would think. The common cold attacks us when we are cold, because it's cold, right?

Not quite. 'There are more than 200 viruses that can cause an infection that leads to a cold, and they are mainly coronaviruses or rhinoviruses,' says Andrew Soppitt, a consultant in anaesthesia and intensive care medicine who knows a thing or two about viruses and is also a keen cyclist. 'The outside temperature has no direct bearing on infection, and in fact acute exposure to cold may make you less susceptible thanks to the secretion of noradrenaline, which acts as a decongestant. However, returning indoors from the cold may lead to a vasodilation of blood vessels in the nose, nasal congestion and an increased chance of catching a cold.'

The germs are spread by those nastiest of things: people. 'Transmission is via air droplets – sneezing – as well as touching contaminated objects or close proximity to an infected person,' says GP Dr Ian Campbell. 'Colds are more common in winter because we spend more time in enclosed spaces mixing with others who have the virus, so being out on your bike is potentially one of the safest places to be.'

To make the distinction, influenza is also more common in winter, but for reasons to do with temperature and humidity. The virus is extremely stable in colder temperatures, but becomes less stable the warmer you go. Above 29°C the virus isn't transmitted at all. It's a similar story with humidity – in humid conditions, the water droplets in the air that transmit flu become heavier, and are more likely to land on the floor than on you.

Contact with other humans is the common denominator, so the active cyclist who's not afraid of winter riding could actually reduce their chances of catching a cold or flu by heading out on their own. And there's another upside.

'All the evidence points towards regular physical activity helping to reduce the risk of colds and infections,' says Campbell. 'Our immunity is increased by being physically active. Extreme exercise – more than 15 hours a week – *can* make our immunity worse, but riding a bike doesn't increase risk per se.'

Down with the pros

Last month we looked at the factors that make pro riders better at cycling than the rest of us, and you may be pleased to know that, largely, immunity from illness isn't one of them. 'The pros are humans like everyone else,' says ABCC senior coach Ian Goodhew. 'They travel and room together so there's always

potential for bacteria to spread. Colds are passed from person to person and that's life – we all get them. The difference for the pros is that in the next room in the hotel is a doctor. They're managed 24/7 by experts. We're not.'

There are exceptions. 'Some pros are constitutionally strong,' he adds. 'Stephen Roche and Sean Kelly were very different. I remember once Roche was bitten by a bug and swelled up the next day, and the doctor said, "The bug wouldn't have dared bite Kelly." That's just luck – if someone is constitutionally strong they seem to avoid colds and other medical problems.'

And those exceptions exist among all of us. 'I never got ill until I had a viral infection,' Goodhew says. 'I kept riding, getting ill, riding, getting ill, and after 18 months of this I had to rest, but my immune system was never the same again. You see age groupers racing and they've probably never been ill. The rest of us aged 50 or 60 who still ride purely for pleasure will have had some sort of medical problem at one point or other.'

There is no cure for the common cold but it should only last a few days. If you try to train through it you can risk making things worse...

There are some simple methods that everyone can follow to avoid germs. 'Steer clear of crowded places, avoid people who have a cold and wash your hands before drinking, eating or touching an infected person or object such as workplace equipment,' says Campbell. Then there are some tips specifically for cyclists: 'Don't wear face masks. They only work for around 20 minutes and make you look stupid.'

'Be careful with drinks bottles,' adds Goodhew. 'Ideally you want something sterile in your mouth and they're not. Don't use the same bottle all year round because it will end up full of bacteria.'

Once you do catch a cold, there's not a lot you can do about it. 'It has to get rid of itself,' says Campbell. 'Your body's immune system will deal with it over a few days. Drink plenty of fluids and use paracetemol or ibuprofen to reduce temperature or aches and pains.'

There are other things you can try, but these ease the symptoms rather than cure the cold. 'Inhaling steam may help,' says Soppitt. 'Some people swear by echinacea. Studies are conflicting but at best it may shorten duration by a day.'

So should you train through a cold or not? 'As a simple guide, if symptoms are above the neck, you can exercise,' says Campbell. 'If they're below – breathlessness, cough or chest pains – it's best to avoid strenuous exercise.'

'Your body uses energy to recover from illness and that leaves you less for training. You might think, "I'll take it easy," or "I'll ride at the back in this race," but you won't'



Take to your bed

Goodhew isn't so sure you should train at all: 'All you do is prolong the illness or make it worse, and you're not training properly anyway. Your body uses energy to recover from illness and that leaves you less for training. You might think, "I'll take it easy," or "I'll ride at the back in this race," but you won't. So stop and get rid of it. If you carry on riding you'll prolong it for a week and need another week to recover.'

The best way to gauge your recovery from a cold is with your heart rate. 'Don't train until it's within 10% of normal,' says Goodhew. 'If your resting heart rate is 50 and it's gone up to 57 you shouldn't train, but if it's 53 you can. Your heart rate tells you so much about your health.'

And follow the example of Bradley Wiggins, who pulled out of the National Track Championships in September with a cold he picked up on the Tour of Britain.

'Mark Cavendish, in his new book, says cycling is basically self-harm,' says Goodhew. 'We go out, kick the shit out of ourselves and love it. And the pros just manage illness better. Unless they're in the middle of the Tour they'll take two days off or miss a race when they get a cold. It's happened a lot this year and it gives you an idea how seriously the pros take illness.'

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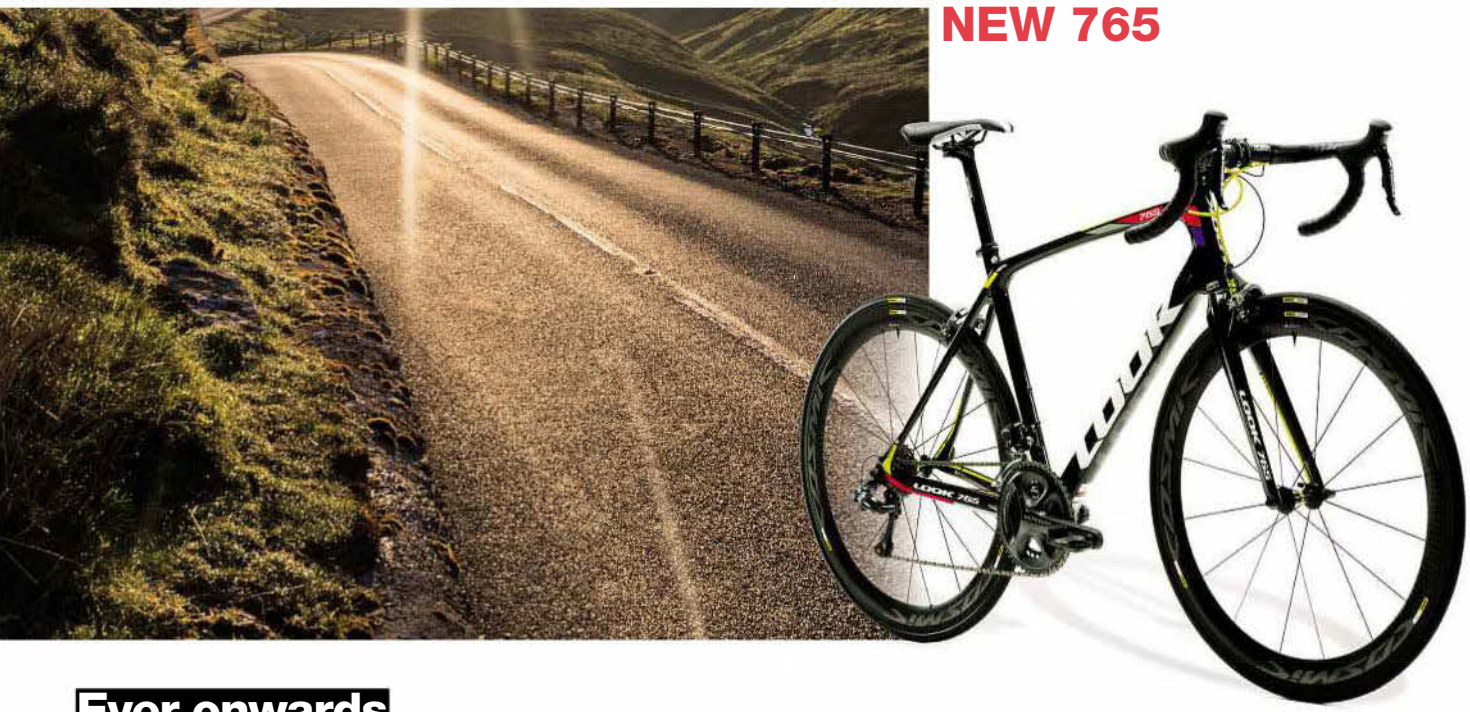
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LOOK

Making of a champion

As Peter Sagan updates his wardrobe, we look at the journey of the rainbow stripes

Words **SAM CHALLIS** Photography **HENRY CARTER**

Depending on your perspective, the end of the Road Race World Championships was just the start. When Peter Sagan rolled over the line in Richmond in September with his arms spread lazily and a grin on his face, his race was done. But for Tinkoff-Saxo's kit manufacturer, Sportful, the race was just beginning.

'I'd love to tell you some story about us watching the World Champs, running back to the office and working feverishly all night,' says Glen McKibben, Sportful's brand manager. 'But the UCI guidelines are pretty strict about what we can and can't do, so it was a smooth process and was all finished rather quickly.'

It took Sportful less than three days to produce a prototype jersey that was ready to send off to the UCI, cycling's governing body, for approval. As Sagan was straight off to race in the deserts of Abu Dhabi, the design was first printed onto the well-ventilated BodyFit Pro Race jersey. 'Within eight days we had a finished jersey for Sagan to wear. But two days after that he had five or six, and it was easy from there to make a lot – Sagan wanted to give jerseys to people who have helped him along the way,' McKibben says.

Cyclist has managed to get hold of one of Sagan's jerseys, but for Sportful to sell replica jerseys to the public, it needs to pay royalties to the UCI and Santini, which produces the podium jersey for the World Championships.

McKibben explains the impact a World Champion riding in its kit has on the brand: 'I think it is both very satisfying and something we are very proud of. It's not to say we won Sagan the jersey but I think it gives us a way to spotlight a lot of the work we've done with the Tinkoff-Saxo team over the last few years, and more importantly all the work we've been doing with all our pro riders over the last 40 years.'

The UCI dedicates five pages of its rulebook to the World Champion's jersey, indicating how and when it can be worn, and what adaptations a clothing supplier can make to it. Every logo needs to be positioned exactly, and there are even regulations dictating what shorts can be worn with the jersey.

'We're looking for a little bit of leeway. We want black shorts with the rainbow bands on, but need to check their compliance with the UCI,' says McKibben. If Sportful can't get its shorts approved, Sagan will have to stick with the white ones he wore in Abu Dhabi. White shorts are a bad look on most riders, but if anyone can pull it off, it's Sagan.



The World Champion's rainbow jersey may look like just another cycling shirt, but the UCI has strict rules on how it should look, as well as how and when it can be worn

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Airtight argument

Inner tubes are often seen as cheap and disposable, but they can make a significant difference to your ride

Words **STU BOWERS** Photography **HENRY CARTER**



Tyres are one of the most important components on a road bike, affecting ride feel, handling and speed (read more on p114), but don't forget about what's inside the carcass keeping it up to pressure – the humble inner tube. They may not seem like the most exciting products to discuss, or spend money on, but inner tubes are the unsung heroes of road bike performance.

It's debatable as to who invented the inner tube. The pneumatic tyre was patented in 1845 by Scottish inventor Robert William Thomson, but it was another Scottish inventor, John Boyd Dunlop, who applied the design of a pneumatic tyre to the bicycle. American Philip Strauss is said to have invented the first combination tyre and separate inner tube in 1911, although Michelin also lays claim to this solution. Regardless of who got there first, inner tubes have remained the go-to method for inflating bicycle tyres for more than a century. Most cyclists have probably bought, patched and discarded more inner tubes than they'd care to remember, but how much thought do we give to them when making our purchasing decisions?

Through thick and thin

'Inner tubes, like tyres, consist of a mixture of ingredients and, just as in the kitchen, quality ingredients are what count most when it comes to getting the best results,' says Dave Taylor of Schwalbe UK. 'You get what you pay for with tubes. You could have the best, most expensive tyres on the planet, but poor-quality inner tubes would sap the performance of the tyre. They need to work together as a system. Think of it like this – if you're a marathon runner it's pointless having high-quality trainers only to pair them with cheap, rubbish quality socks. The outcome will most likely be wrecked feet and poor performance.'

Before the Second World War most inner tubes were made from natural latex rubber, but this was in short supply after the war so synthetic butyl rubber, among other synthetic alternatives, was used instead. Actually, butyl proved to be better in many ways as latex can be adversely affected by coming in to contact with chemicals, plus it is more porous than butyl rubber.

'In most cases it's the quality and quantity of butyl rubber that affects the tubes' performance,' says Taylor. 'A higher butyl rubber content usually means greater elasticity plus a more airtight tube, but butyl obviously costs more than cheaper forms of synthetic rubber, so a cheap tube is usually made of poorer material. It will need to be thicker to be airtight, so will be heavier and will have increased rolling mass. It will also be less elastic, which will cause greater friction inside the tyre carcass as you ride and thus increase rolling resistance, so there's really nothing to be gained from a cheap inner tube.'

Continental UK's Shelley Childs agrees price is related to performance: 'Our standard Race inner tubes [£6.99] are 1mm thick and the Race Light [£9.99] is 0.75mm thick, but the top of the range Supersonic [£13.99] is only 0.45mm thick – under half the thickness but twice the price. The 0.45mm tube

Above (left to right): Zipp Tangente butyl, £8.99, zipp.com

Continental Supersonic, £13.99, conti-tyres.co.uk

Vittoria Ultralite Latex, £10.99, chickencycles.co.uk







will still hold air and take the same pressure because it's a higher quality. But there are trade-offs. It's so thin you need to take more care during installation – we don't recommend using tyre levers, for example. They will provide a performance benefit, but you have to accept the risks.'

Taylor adds, 'One way you can quickly tell if an inner tube is made of quality materials is to look on the box to see the size range it covers. If it covers a broad size range, eg 700c x 19-28mm, you'd expect this to be of high quality, or the elasticity [of the material] wouldn't be sufficient to allow it.'

It stands to reason that a lighter tube is thinner and therefore more supple, which could result in an overall better ride experience – unless of course you experience an increase in punctures. Herein lies a common conundrum and indeed a regular misconception. You might assume a thick, heavy tube will be more puncture-resistant and that you might be prepared to put up with its negative effects on your ride quality just to know you won't spend too much time at the roadside fixing flats. It's a hasty assumption.

'It's a misconception that cheaper, thicker inner tubes will be more puncture-proof,' says Schwalbe UK's Taylor. 'It's actually the reverse'

'It's a misconception that cheaper, thicker inner tubes will be more puncture-proof,' says Taylor. 'It's actually the reverse. A thicker tube will not flex as much if a tiny piece of flint [or whatever] pierces through the carcass of the tyre. It's likely to instantly cause a puncture when it comes into contact with the inner tube. With a more flexible material the tube may well rub against the protruding flint or even flex around it.'

Bend me, shape me

In the knowledge that the best form for an inner tube is to be as elastic and lightweight as possible, why then is latex not more commonplace?

'We stopped selling latex tubes because the failure rate was too high,' says Childs. 'Latex tubes wouldn't pass our quality control tests, because latex is quite fragile and needs to be treated very carefully.'

Taylor agrees, adding, 'Schwalbe did at one time sell latex inner tubes [and it still uses latex inner tubes in its tubulars] but it is tricky to look after. It's sensitive to a lot of things, like moisture, oils and even sunlight, so it isn't long lasting unless you take very good care of it. Plus it's not as airtight so you need to pump up your tyres before every ride. Also, to be honest, the development of butyl has come on such a long way in recent years you can have almost as light and flexible tubes without the constraints of latex.'

Vittoria is one brand that still continues to make and tout the benefits of latex inner tubes. Vittoria's UK marketing coordinator, Alex Rowling, says, 'Butyl tubes can only be manufactured so thin before the integrity of the tube is compromised, and with cheap tubes there's an increased risk of material inconsistencies. Latex allows tubes to be thinner and lighter than an ultralight butyl tube. Furthermore, the latex tubes offer a more supple ride, identical to what's used inside Vittoria's tubulars. So combine a latex tube and a Vittoria 320TPI open tubular tyre [clincher] and you will have a ride as close to a tubular as possible, but with the convenience of being able to change the tube if you're unfortunate enough to puncture.'

The message is that it's worth thinking about inner tubes as performance products, rather than simply dismissing them as disposables. As Continental's Childs concludes, 'If you've just spent north of a thousand quid on wheels, why would you not want to finish off the package with top quality tyres and tubes? They will have a big part to play in how those wheels, and the bike, feels to ride.'



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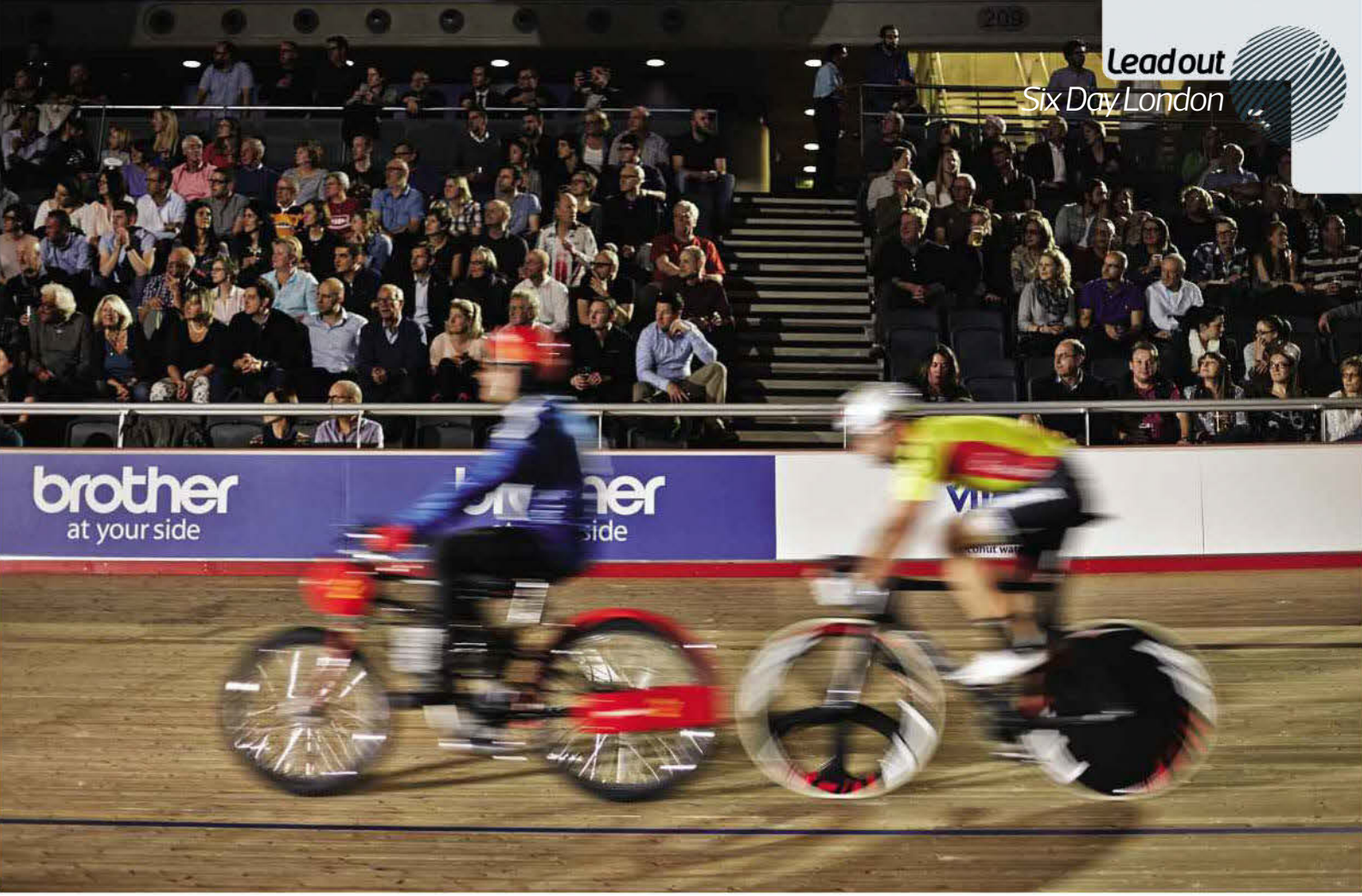


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Back on track

It's been 137 years since London first hosted a six-day cycling event. Now it's back with a bang

Words and Photography **JORDAN GIBBONS**

You'd be forgiven if you've never attended a six-day race before. In fact you'd be forgiven if you've never even heard of the format, because six-day racing has been missing from the UK cycling calendar for 35 years until its recent return. The roots of the format, however, are very firmly based in London.

'The first six-day event was in Islington in 1878 and was the result of a bet,' says David Harmon, head of communications for Six Day London, the new track event that took place in October at the Lee Valley Olympic Velodrome. A cyclist called David Stanton wagered that he could ride 1,000 miles over a period of six days. He won the bet, and a new spectacle was born.

'It transferred across the Atlantic very quickly, and in a pre-television, pre-cinema age it was an extremely popular sport,' says Harmon. 'There was a six-day at Madison Square Gardens, where the madison race was invented. It used to draw in big film stars and gangsters like Al Capone. They used to throw money onto the track, which is where the sprint primes [money prizes] come from.

THE DETAILS

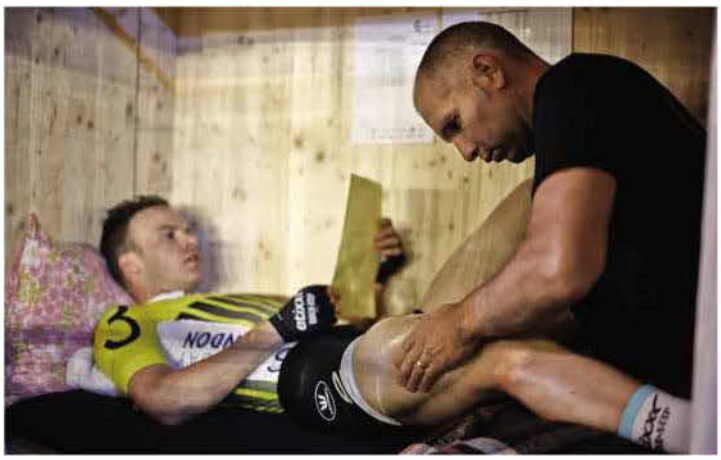
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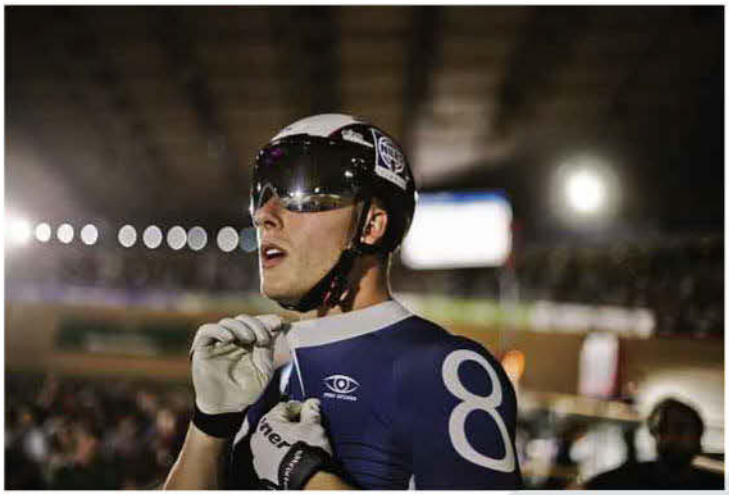
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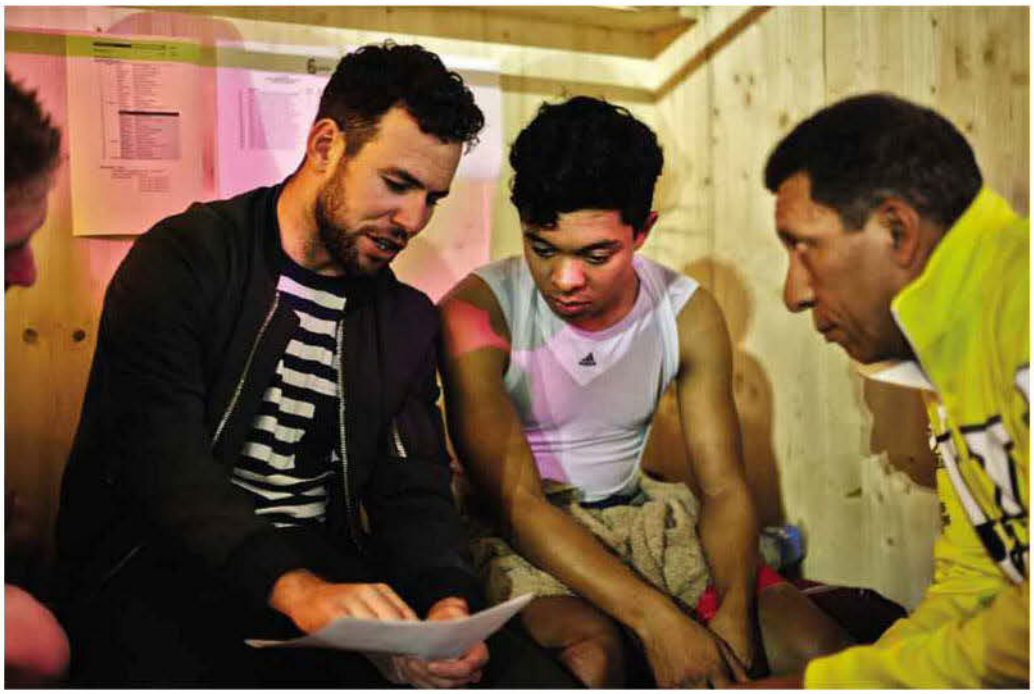
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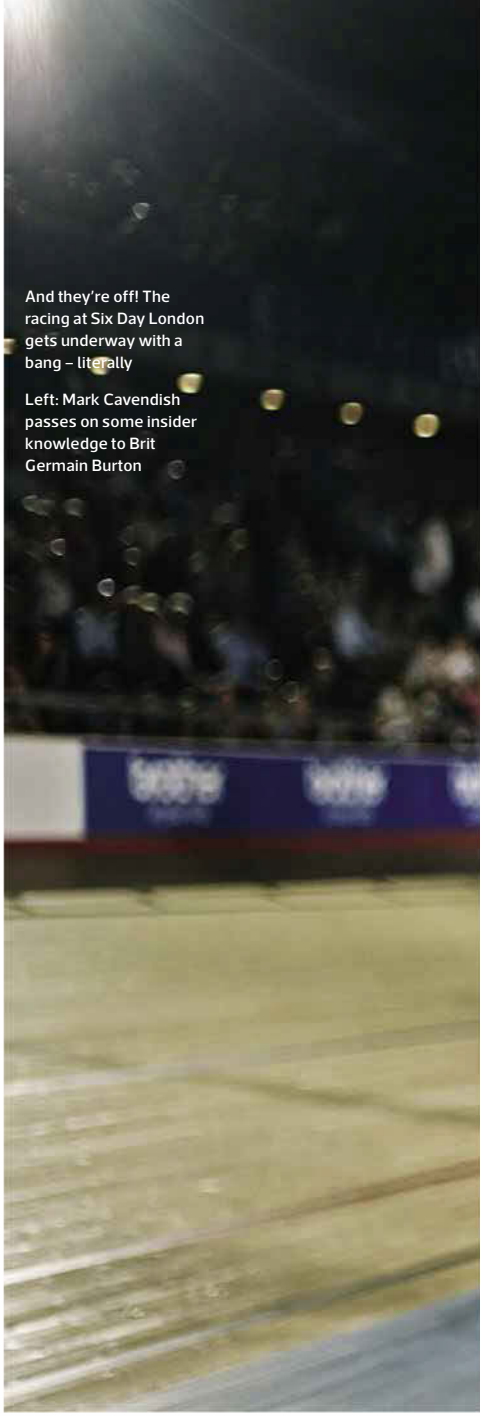
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And they're off! The racing at Six Day London gets underway with a bang – literally

Left: Mark Cavendish passes on some insider knowledge to Brit Germain Burton

'At the time in America, more spectators went to six-day racing than baseball, basketball and football combined,' Harmon continues. 'It was the biggest sport in the USA before the war. After the war, TV and cars took off and it died away. People simply didn't relate to the bicycle as much as they used to.'

Big in Belgium

These days, six-day racing is still hugely popular in Europe. The biggest fanbase is Belgium, where the Ghent Six-Day is famous for its huge crowds, fug of cigarette smoke and boozy atmosphere.

'Unlike in the USA, on the Continent people needed something to rally to after the war. It was cheap entertainment. You could go to a hall, drink a few cheap beers, smoke a few cheap cigarettes and have a good time. That's what six-day racing is all about,' says Harmon.

While Britain was still riding the wave of cycling excitement generated by the Olympics, the Tour de France successes and the Grand Départ in Yorkshire, Harmon and a team of like-minded cycling aficionados thought it was time six-day track racing returned to the UK: 'People have seen Olympic track cycling and World Cup track racing. They've seen Revolution. This is something a little bit different. The cycling public is becoming more and more sophisticated. Six-day is still a concept that people need to get to grips with.'

When a round of the Cyclocross World Cup came to Milton Keynes last year, the organisers were keen that it had its own feel and wasn't just a cheap imitation of a Belgian cross race. Harmon felt the same about Six Day London, although he admitted it would be impossible to completely diverge.

'We didn't want to divorce six-day from electric entertainment,' he says. 'You want people to enjoy their night out. We wanted to update the partygoer atmosphere, which is why we got a DJ from Ministry Of Sound. He even got the sprinters dancing in the middle with giant foam fingers on.'

Electric entertainment is certainly one way of describing the event. In Ghent, it's more like a mass drinking competition, and in the middle of it all a bike race breaks out. Six Day London is far more about the racing, it just feels like it happens to be taking place during a deep house set in an east London nightclub, not the Olympic velodrome.

Dancing on the pedals

The racing is exactly what the organisers promised: fast and furious. At a six-day event, each race has its own winners and a points value. The points are totted up over the course of six days to come up with an overall winner at the end. This means that as a spectator you're guaranteed at least 10 races per night, including the madison, keirin, omnium, sprints, elimination and lots more. For the athletes it means they need to pick their races carefully.

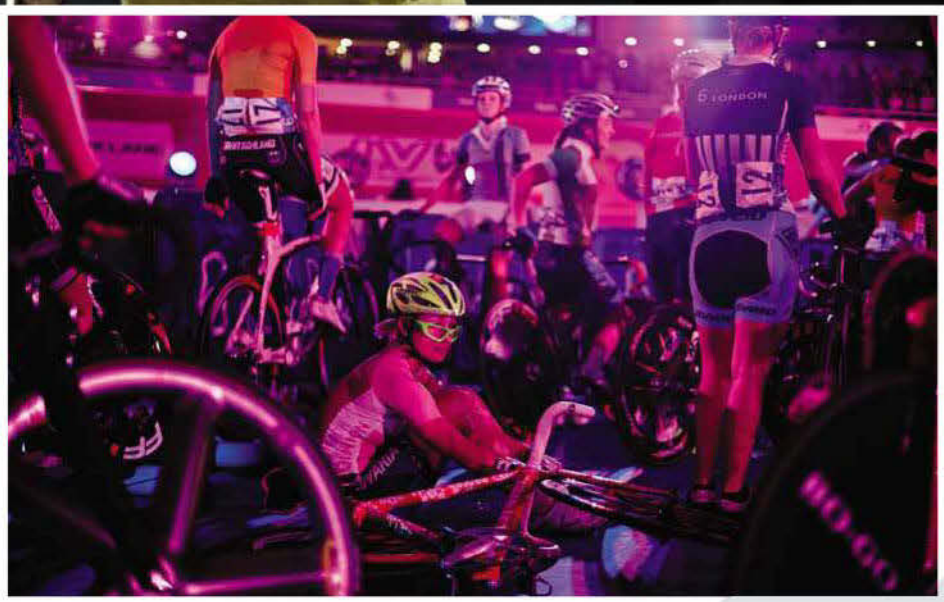
Dotted around the inside of the track are numerous wooden cabins where the riders rest, keep up with the evening's results and plan their efforts. At one point, we catch Mark Cavendish giving tips to young British star Germain Burton and his partner Mark Stewart. Are the tips useful? 'Well, yes,' replies Burton. 'I mean, it's not every day you get tips off a former World Champion.'

'People have seen Olympic track cycling. They've seen Revolution. This is something a little bit different. Six-day is still a concept that people need to get to grips with'

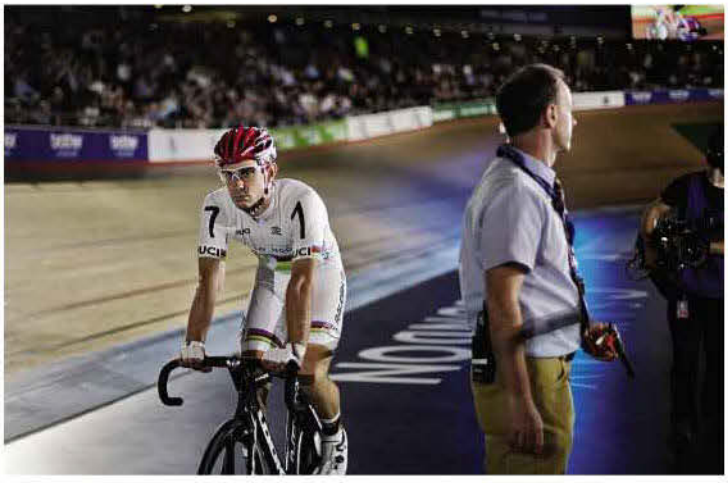
Not all riders are here for the full six days of racing. Former GB rider Matt Rotherham has come to race the sprint on the Friday night. 'I've raced the last couple of years at the Bremen Six-Day in January, which is a fantastic event that they've replicated here,' he says. 'Tonight, the capacity crowd is unbelievable. Six-day is more about the entertainment value. The spectators can come to any old track race and watch everyone be serious. This is a little more of a party atmosphere. People can see a lighter side of the sport.' And with that, Rotherham removes his helmet, dons a foam finger and takes to the stage to dance to the Vengaboys.

When we suggest it's all a big party to Dutch pro Niki Terpstra he seems a little surprised. 'Relaxed? Have you seen the racing? This is totally different to the normal events. It's very intensive.'

Brit Adam Blythe echoes his sentiments, albeit for different reasons. 'I guess it's relaxing for the









Capacity crowds packed the Lee Valley Velodrome to witness intense – and colourful – action

'We wanted to update the partygoer atmosphere, which is why we got a DJ involved. He even got the sprinters dancing in the middle with foam fingers on'

guests with their own space in the middle of the track, but the racing isn't relaxed. London is different because it's a long old track. In Europe, the tracks are much shorter so it looks like they're going much faster. They're 166m compared to 250m here.'

He doesn't seem to be in end-of-season party mood either: 'End of season? No, it's the start of winter training for me, which is probably the wrong way to go about it.'

Not long passes before the music is drowned out by the fans. GB duo Latham and Wood snatch the madison TT by a few tenths, to the delight of the crowd. Then, in turn, the fans are drowned out by the screaming engines of the derny races. In the end, the British pair are edged out of the overall win by Belgians Kenny De Ketele and Moreno De Pauw.

As the crowds disperse, *Cyclist* catches up with Harmon, who seems delighted with how the event had unfolded. 'Every six-day has its own character, but Ghent is the one everyone wants to win,' he says. 'It's the Wimbledon of six-day racing. But London has been a huge success. We want this to be an annual thing, not just a flash in the pan. We want it to develop its own atmosphere and become a calendar event equal to Ghent.'

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In praise of... Maps

In a world of GPS computer navigation, there is still something magical about a big, printed, fold-out map

Words **TREVOR WARD** Photography **HENRY CARTER**

When the Ordnance Survey maps of half a century ago were plotted, surveyors were issued with a list of trusted sources for finding out place names. The surveyors tasked with compiling the 1954 'One Inch Seventh Sheet No46' for the west of Scotland, for example, would only have settled on the name 'Barrancalltunn' for a farm near Oban after consulting either a clergyman, schoolmaster or doctor.

'Under no circumstances were they to believe the people living there, especially if they were labourers or common people, as they wouldn't have a clue and certainly wouldn't know how to spell it,' according to Mike Parker, author of *Map Addict*.

This degree of dedication to the art of cartography is why I love printed maps.

In today's digital age where a street plan of Timbuktu is only a click away, an old-fashioned, printed-on-paper map is something special. Although GPS has made it unnecessary for cyclists to carry maps with them, I still get a buzz from unfolding an OS Landranger or Explorer Sheet on the eve of riding a new route. I may eventually upload the GPX file direct to my Garmin for convenience during the ride itself, but before that I want to savour and anticipate every contour, cart track and coniferous wood ahead of me. You can't do that with a microchip.

My love affair with maps started when my girlfriend and I cycled to the Sahara and back in the 1980s. These were the days when cycle tourists arriving in remote settlements were greeted by the local youngsters with a hail of stones rather than requests to swap email addresses. If we'd turned up with a GPS unit on our handlebars we'd probably have been exalted as gods. As it was, our regular stops to unfold and consult a big coloured sheet of paper usually aroused sufficient curiosity to halt the barrage of missiles.

The side pocket of one of my bulky rear panniers was reserved exclusively for a set of Michelin's yellow 1:200,000 maps. (The other housed my expertly curated collection of C90 mix-tapes, featuring mainly Prefab Sprout and Echo & The Bunnymen. I also carried a fold-up camping chair. The term 'marginal gains' hadn't been invented yet.)

Each night, we'd sit around our camp stove – me in my camping chair, she cross-legged on the grass – plotting the next day's route before the sky darkened. Unfurled to their distinctive oblong shape, the maps resembled ornate tapestries. Threads of red and yellow illuminated a patchwork of brown and green.



A map and pen might be old-school, but there are few things as satisfying as plotting a route by hand

The first Ordnance Survey maps were produced in response to the threat of invasion by Napolean's forces in 1790

A map has a dual effect: it reminds you of your place in the world, but it also broadens your horizons. As the hero of Jonathan Safran Foer's novel, *Everything Is Illuminated*, puts it, a map 'is a remembrance of that time before our planet was so small... when you could live without knowing where you were not living'.

Our Michelin maps were *avec relief* – instead of contours they had subtle variations in shading to depict undulating terrain. To calculate how much climbing the next day had in store, we'd look for pyramid symbols giving the heights of mountains and double or triple chevrons indicating gradients of 'over 13%', while roads with a green shading signalled *parcours pittoresque*.

By the time we climbed into our sleeping bags, our imaginations were aflame. What would St Symphorien-de-Mahun be like? What was the *autre curiosité* denoted by a small black triangle in the middle of that forest?

The trip lasted four months and it's testament to the beauty of those maps that practically every one of them made it back home intact (apart from a map of Italy which we ceremonially set alight on the ferry from Trapani to Tunis in protest at various linguistic, cultural and culinary indignities we had suffered).

Part of the attraction of a map is that you can have the world literally in your hands. It compresses the urban sprawl or rugged topography around you into a one dimensional, scaled-down form.

Though maps of today are largely the product of satellite imaging, their legacy dates back to an age of adventure when navigators braved perilous voyages to the edges of the known world armed only with a theodolite and a hold full of salted sardines.

More recent map-makers have endured hardships such as three weeks camped in snow at the summit of Ben Nevis or dislocated shoulders caused by attacks by Arctic skuas, recounts Parker. All of which should make us appreciate the finished product even more.

The first Ordnance Survey maps were produced in response to the threat of invasion by Napolean's forces in 1790 and were designed to show the quickest routes for supply lines and artillery transport along England's south coast. Other maps have had the opposite effect – triggering wars thanks to inaccurately drawn borders or cartographic 'land grabs'. But maps should be celebrated for their uncontroversial cornucopia of footbridges, contours and spot heights.

Above all, a map is a reminder of a time when the journey was as exciting as the arrival: when airlines still gave out free drinks in economy; when it didn't require a physics degree to book the cheapest train ticket; when every self-respecting motorist donned a pair of calfskin driving gloves.

Maps are just about all that remains from that golden age of travel. And they still have the power to inspire and excite.

Even when you're travelling by bike.



Maps go hand in hand with cycling because they date back to an age of adventure, when you didn't know what was around the next corner. Sometimes that's the point of getting on a bike

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Off the beaten path

Is a gravel bike an affront to the Rules? Frank Strack offers his verdict

Dear Frank

I'm thinking of buying a 'gravel' bike but worry that it is a step too far from being a road bike. Should I reconsider?

Liam, by email

Dear Liam

Rule #12 is very clear on this. To paraphrase, you should always get another bike unless it would cause you to separate from your partner. Truth be told however, relationships are two-way streets and if he or she is willing to split up with you over a simple material possession, maybe they're too shallow a person to spend your life with and you'd be better off with the bike anyway. Rule #11 (family does not come first, the bike does) rounds this out nicely.

As an aside, here's a simple strategy: hook up with another cyclist and all your troubles will be solved, apart from anything relating to finances. My strategy is to always ensure my partner has a slightly better bike than mine, which subtly justifies an ongoing stream of upgrades. It works brilliantly, assuming you don't want to have kids or open a savings account.

So we all agree you should buy another bike, but the question appears to be: is a gravel bike a worthy investment?

Let me start by stating I don't understand the need for a separate class of bike designated as a 'gravel' bike. A ride over the cobbles of northern Europe will educate you quickly on the abuses a road bike is equipped to handle. And for even rougher terrain, the geniuses behind 'the bicycle' have already come up with an excellent solution: the cyclocross bike. Cyclocross is basically the miniature golf of cycling: dirt, sand traps and water obstacles except combined with anaerobic exercise and possibly alcohol. It's genius, when you break it down to those very basic necessities of life.

Tune a cyclocross bike to represent your typical road position (most cross bikes have a higher riding style for better handling) and you have yourself an incredibly versatile machine that can gobble up tarmac, cobbles, gravel and singletrack equally. Which is a long way of saying that I don't see a need for a 'gravel' bike, although the powers that be (wanting to sell more bikes) apparently feel differently.

All that said, I'm finally coming around to answering your question, which is – as I interpret it – is it worth owning a bike that isn't dedicated to the road? Eddy Merckx, who is a cyclist of some repute, said, 'Ride as much or as little, or as long or as short as you feel. But ride.'

I've always ridden off-road. My first mountain bike was an awkward thing from the mid-80s I bought somewhere in Colorado. It was horrible to ride, but it allowed me to explore areas by bike that were previously inaccessible.

Mountain biking technology advanced quickly and only a few years later I was riding Bridgestones over root and rock-infested singletrack at high speed, probably with my tongue hanging out like a crazed Labrador.

Being in the wilderness offers a freedom from cars and other artefacts of society that can kill you, and is possibly the most liberating experience a human being can have. Mountain biking gave that to me, while still allowing me the delight of pedalling over the monotony of hiking. Not to mention giving me great bike handling skills. I recommend it for any cyclist.

Riding on the road is a remarkable study in rhythm and harmony, which is something mountain biking lacks and is why I've always preferred the road. On the other hand, riding off-road allows us to escape from the commotion of traffic and submit to the beauty of nature. Riding gravel roads is perhaps the perfect balance between the rhythmic harmony of riding on the road and the liberty from the constraints of traffic and other nutcases that might harm you. As Emperor Palpatine said, 'To understand the Great Mystery, one must study all its aspects.' I suggest that straying from the road and exploring the gravel and dirt is probably the best thing you can do to enhance your love for cycling.

Again, remember the Merckx mantra. 'Ride as much or as little, or as long or as short as you feel. But ride.'



Frank Strack is the creator and curator of The Rules. For further illumination see velominati.com or find a copy of *The Rules* (Sceptre) in all good bookshops. Email your questions to him at cyclist@dennis.co.uk

Illustration **Clear as Mud**

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On a wing and a prayer

Two classic climbs and a hidden gem make this ride a fantastic introduction to the Pyrenees

Words **JONATHAN MANNING** Photography **GEORGE MARSHALL**

A spiral of 50-plus vultures is rising from the valley floor like giant soot particles lifting from a fire. I've heard somewhere that a sixth sense allows these creatures to detect a carcass from four miles away. As we emerge from a tunnel hewn through a cliff face below the Col d'Aubisque, I fear they might be able to sense my pummelling heart rate and decide to move in for the kill.

'There must be a dead body or a dying creature nearby to have so many vultures together like that,' says my riding partner Marc Bruning. I feel a chill go down my spine.

We've just tackled the Col du Soulor, gaining almost 600m in just 7km at an average gradient of 8%, and the climbing isn't over yet. Ahead lies the Col d'Aubisque, 235m closer to the heavens at an average gradient of 6.5% but including spikes of up to 18%. Tour de France organisers rate this a first category climb, closely following the second-category Soulor. Together they form a fearsome tag team, the first sapping your energy before the second lands the knockout blow. Maybe both cols are in cahoots with the vultures. Oh well, on a wing and a prayer...





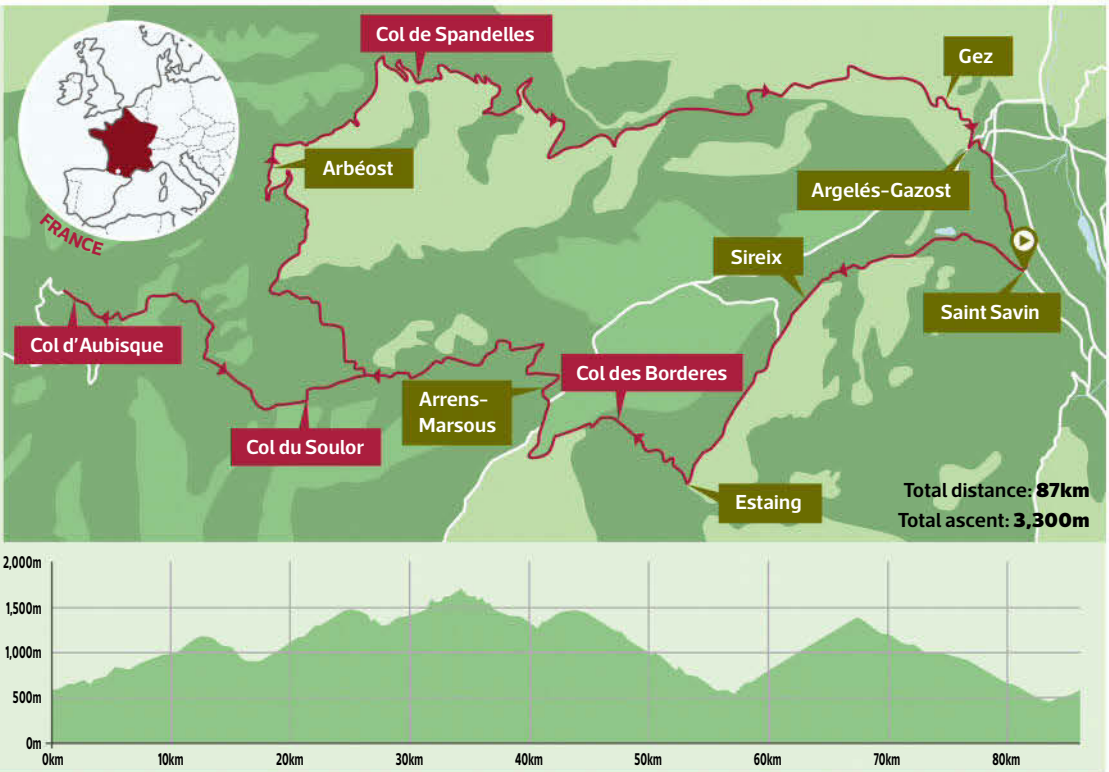
Local knowledge

It's early morning – well before the heat of the day reaches furnace temperatures – as we roll out of St Savin, a pretty village centred around a beautiful 11th-century abbey.

Life and Soulor

Cram a weekend's worth of climbing into 90km

To download this route go to cyclist.co.uk/42pyrenees. From Saint Savin take the D13 to Sireix then Estaing, where you turn right to tackle the Col des Bordères. This descends to Arrens-Marsous, from where the D918 leads up the Col du Soulor and on to the top of the Col d'Aubisque. Here, make a U-turn and head back to Soulor, then follow the D126 to Arbéost, then Ferrières, then after 2km, turn right onto the narrow Col de Spandelles. Once over the col, descend to Gez, take the D102 to Argelès-Gazost and, finally, the D921 back to the start at Saint Savin.





The thrilling descent of Col du Soulor is welcome payback for the 7km climb

Top left: Tunnels on the Col d'Aubisque provide some moments of respite from the heat



Right: The serrated skyline of the Haute Pyrenees hints at the quality and severity of the riding in these parts

Below: Time to stock up on the sticky stuff from a roadside honey stall, before refilling bidons from a wind-up water pump

With me are Paddy McSweeney, who runs Velo Peloton Pyrenees, a cycling lodge and bike hire business, and Marc Bruning, director of sport in the Hautes Pyrenees. They're a formidable pair. Marc keeps off the winter kilos as a champion cross-country skier, while last year Paddy rode up Hautacam 100 times, squeezing the legendary 1,000m ascent between work and family commitments.

'The first 96 ascents were terrible, but it got easier after that,' he says. I'm not sure he's joking. His first ride up was on 2nd January when the snow was shoulder height along the roadside, and he completed the century in December.

'The summer heat makes everything much worse,' adds Paddy. 'I really enjoyed autumn, going up at the end of the afternoon and coming down again with lights on the bike. I could be up and back at home within two hours.'

As training rides go, it's about as good as it gets, and explains his easy cadence as we spin through villages slowly waking to the morning. One of them is Sireix, the unlikely ancestral home of the Swedish royal family thanks to Napoleon having decided to place a crony from the village on the Scandinavian throne.

The Gave d'Estaing is our constant companion in these early miles, a stream as clear as mineral water, freshened by cascades from the Cabaliros mountain above. Cabaliros has a peak that reaches more than 1km higher than anywhere in Britain, but around here it's unremarkable. The same could be said for the Col des Bordères, a climb that would be famous in the UK, but one that's a tiddler in Pyrenean terms. This is of little consolation to my legs as they get their first taste today of serious ascent with 2km at a gradient of 10%.

The Haute Pyrenees is a rugged land where stone farmhouses hunker down under slate roofs without any of the tweeness of wooden Alpine chalets. We ride past three generations of a family raking hay by hand, and if it wasn't for the denim it could be a scene painted by Constable.

A brief plateau ushers in a blistering descent, before we catch our breath in Arrens-Marsous, where a wind-up waterpump gives us a chance to refill our bidons before two of the classic climbs of the Tour.

Soulor first featured in the Tour de France way back in 1912, two years after its taller neighbour the Aubisque, and has been a regular thorn in the side of pro riders ever since. We're tackling it from the supposedly easier approach, but its Top Trump card would still note a 7km climb at an average 8% gradient. For Strava glory we'd need to try to push the needle to 18kmh and beyond, but instead we're barely breaking double figures during the steeper stretches as we settle in for the slog skywards.

The views from the summit of Soulor are spellbinding – a 360-degree panorama dominated by the Balaïtous massif

We pass a roadside honey stall, decorated with yellowing magazine pages dedicated to the sticky stuff's health-giving qualities. Marc tells me of a honey farmer he knows nearby who looked up one day to see Miguel Indurain and one of his Banesto teammates enter his shop. The pair proceeded to buy up the entire stock of royal jelly.

And still we climb. Road signs tick off every hard-earned kilometre and advertise the gradient for the next 1,000m – cycling's equivalent of tearing the pages off a desk calendar. It's bliss when I miss a sign and enjoy the surprise of its successor revealing that I'm closer to the summit than I thought. But when the ramp hits double digits it feels like the next sign will never come.

We've already breached the treeline, and there's only patchy heather and coarse grass to the left and right before rock takes over. It's as if the mountain has burst through a green velvet cloak, Hulk-style, to beat its chest in an uncontrollable rage at the landscape below.

Eventually the tarmac stops rising and a road sign marks the summit of Soulor. The views are spellbinding, a 360° panorama dominated by the Balaïtous massif. Trouble is, the Aubisque lies straight ahead. The Aubisque has featured in about 70 Tours de France, making it a staple of the Grand Boucle's visits to the Pyrenees, eclipsed



Miraculous escape

How one rider fell into the history books

A weather-beaten plaque on the descent of the Aubisque bears witness to one of the great survival stories of the Tour de France. Puncturing just before a bend, Dutch rider Wim van Est, who was in the yellow jersey of the 1951 Tour, lost control of his bike and careered off the road into a ravine. Fearing a fatality, his team peered over the edge to see the rider suspended in a tree, 70m below. To winch him to safety, the support team knotted together all the spare tubulars they had with them to fashion a rope. Badly shaken, Van Est was packed off into an ambulance, only to re-emerge looking for his bike. His team manager persuaded him to go to hospital for a check-up, where he was found to be uninjured. The team manager withdrew the team from the race, but Van Est did pick up an advertising deal with Pontiac watches. 'Seventy metres I fell. My heart stood still, but my Pontiac never stopped,' said the ad. There's remarkable footage of his rescue at: youtube.com/watch?v=N0XqFfzoldQ.










The Big Ride
Pyrenees

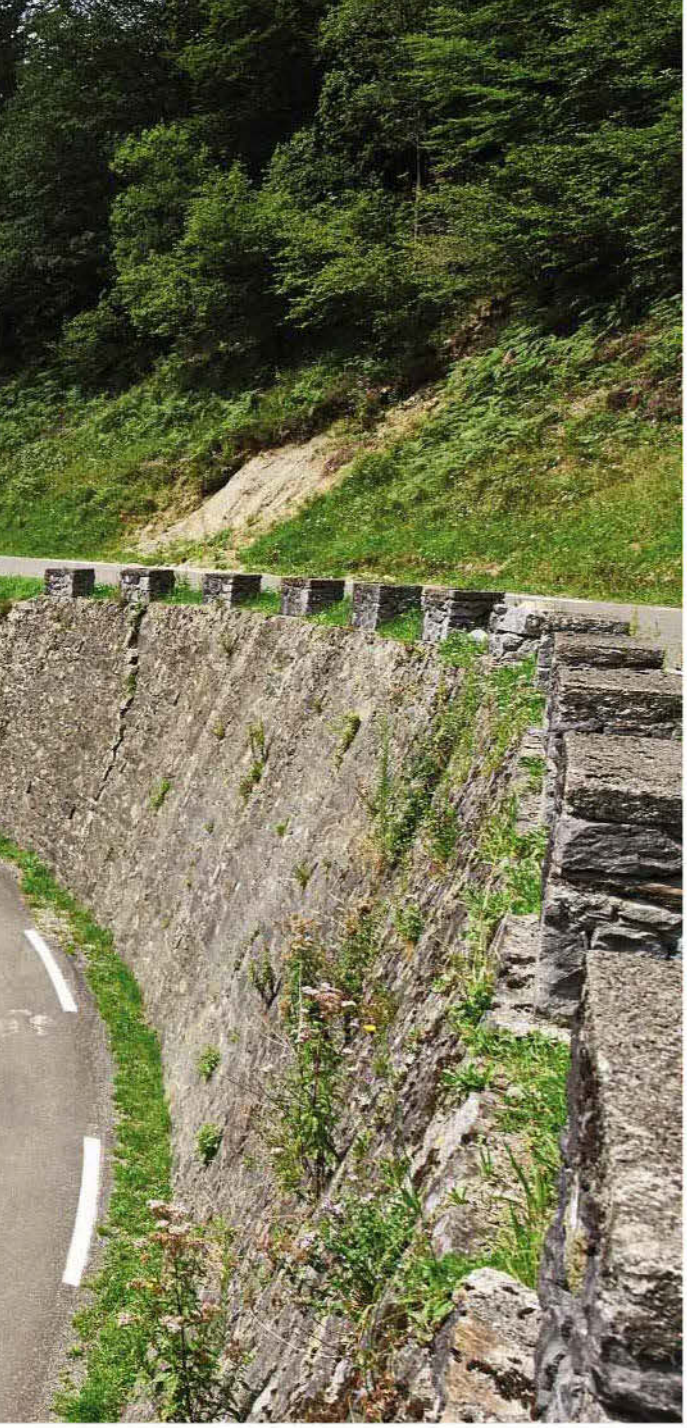


The rider's ride

Lapierre Xelius EFI 200, £2,200, hotlines-uk.com, lapierrebicycles.com

There are bikes that grab your attention, shouting 'me, me, me' with their dazzling colour schemes. Others go about their job without fuss or bother, and the Xelius EFI 200 falls firmly into the latter camp. Within a kilometre of riding, I'd forgotten all about it as the frame swallowed the miles. The geometry is race-oriented, but the seatstays and 25mm tyres (not standard) avoid this being a nailed-down crit racer.

When the road tilted upwards the Xelius's broad down tube, chunky chainstays and beefy bottom bracket transferred whatever power I could muster to the road. And when gravity worked in my favour the fat head tube and front end provided reassuringly direct feedback as I swooped through bends on fast descents. Shimano's Ultegra groupset feels more outstanding every time I try it, and the Mavic Ksyrium Equipe wheels are great for high mountain adventures. Overall, I salute a bike that lets me be the star of the show.



Left: The descent of Col du Soulor is a real white-knuckle ride that takes in sharp hairpins and sweeping bends

Previous pages: The stunning Col d'Aubisque ascent overlooks the Cirque du Litor, a giant arc of rock and scree that tumbles to the valley floor

only by the Tourmalet as the region's most popular cycling challenge. It's a magnificent pass from any direction.

What's more, the brief stretch of road between Soulor and the climb up the Aubisque makes for a scintillating ride. From a distance it's the merest pencil line of grey, clinging to a cliff face in the Cirque du Litor, a giant arc of rock and scree that plunges hundreds of metres to the valley floor. Sheep graze at impossible angles, horses wander freely, while cattle lie by the verge. Somewhere below us is the only cellar in the Hautes Pyrenees where dairymen leave their cheeses to mature. Blessed are the cheesemakers, I recall as we pass an optimistic trader trying to sell the local sheep-milk cheese from a rickety picnic table with only a flimsy parasol for shade.

Life on the ledge

The road turns out to be little more than a ledge, chiselled from or blasted through the rock, and a short tunnel is so cool and damp it's like riding through nature's very own air conditioning. Then the Aubisque starts to bare its teeth. With the promise of lunch at the top, my cadence seems to improve, and truth be told it's not a difficult climb as we gain about 350m over the next 8km – the scenery improving with every turn of the cranks. Slowly but surely, the col cafe enlarges from a tiny speck until we roll on to its terrace – a welcome haven amid a saw-tooth horizon.

On the corner of the terrace is a bust of Lucien Buysse, winner of the longest-ever edition of the Tour de France

The stretch of road between the Soulor and the Aubisque makes for a scintillating ride





and one of its toughest ever stages, back in 1926. Riding 326km and taking in four *hors catégorie* climbs in the cols of the Aubisque, Tourmalet, Aspin and Peyresourde, Buysse averaged 19kmh over 17 hours and 12 minutes in the saddle. Oh, and it rained throughout. In the shadow of his statue, I decide not to mention the twinge in my calf.

Opposite us are three towering bicycles painted yellow, green and polka dot in tribute to the Tour's principal jerseys. They are such a familiar sight from television coverage of the race that I have a strong case of deja vu even though it's my first time here. It's strange, though, to see them without the hoopla and hysteria of thousands of fans milling around their spokes, cheering on the peloton.

A more muted hubbub of excitement is rising from a hillock opposite, where a small group of twitchers have their telescopes trained down the valley. A solitary lammergeyer, also known as the bone-crusher vulture, is gliding serenely towards them on its vast three-metre wingspan. As its name suggests, this huge bird feeds on bones, dropping them from a height onto rocks and then spiralling down to consume the marrow and bone fragments. To digest this exacting diet, its gastric juices are almost pure acid, registering 1 on the pH scale. I do my best to look in rude health as I sit for a cyclist's platter of ham baguette, Orangina and espresso. Marc orders his baguette without butter and then strips the fat from the ham before eating it, which tells you all you need to know about our relative body fat percentages.

The descent of Soulor starts with a headlong dive into a stunning rocky amphitheatre

I turn instead to Paddy, a former elite amateur road racer in Ireland, to ask for his advice on how best to train for mountain ascents. He moved to the Pyrenees from Ireland only a few years ago and has seen a United Nations of riders pass through his doors, drawn by the irresistible appeal of iconic Pyrenean climbs.

'Everyone always arrives with a list of the routes and mountains they want to climb during the week, and by day two it's gone out the window,' he chuckles. 'It's much harder than people think. The best training is to ride hard for an hour on the flat, ideally into a headwind.'

Bolstered by the hours I've spent battling headwinds on the flatlands of Lincolnshire, I feel optimistic as we saddle up for the second half of the ride and its one major climb. Just before we leave, Marc points to the horizon, where it's just possible to make out the Pic du Midi de Bigorre.

By the numbers

Sometimes words aren't enough

3,300
metres of ascent

87
Kilometres ridden

1910
First year the Col d'Aubisque featured in the Tour de France

3
The total wingspan in metres of the lammergeyer (bone-crusher) vulture

70
The distance in metres that 1951 Tour leader Wim van Est fell down a ravine... and survived



Stone barns with slate roofs, rather than ski chalets, are the order of the day in this part of the Pyrenees

Below right: The giant bicycles at the top of the Col d'Aubisque are a famous attraction for the TV cameras, and adventurous children












D 918
ARRENS-MARSOUS 7
ARGELÈS-GAZOST 20
VAL D AZUN













This is one of the few places in France where bears still roam. It's exhilaratingly wild

This is a summit with a distinctive aerial mast, but its neighbour the Tourmalet is smothered in slate grey cloud.

'There's a storm coming,' warns Marc, 'Let's get going.'

We're heading back towards Soulor, and if the descent of the Aubisque is a reminder of the gradients we've tackled, it also comes with a sense of trepidation thanks to the infamous Wim van Est crash in the 1951 Tour (see box on p62). I grip the brakes and feel relieved when I'm caught behind a flock of sheep sauntering down the middle of the road and blocking traffic. When the descent of Soulor starts with a headlong dive into a stunning rocky amphitheatre, I'm hit by a case of the Thibaut Pinots as I watch Marc and Paddy carve elegantly through the bends.

It still feels urgently fast though as I lean into hairpins, weight on the outside foot, desperately trying to look at the exit of bends rather than the five metres in front of my wheel. We pass cyclists coming the other way, many of the older riders hanging their helmets off the handlebars as sweat streams down their foreheads. When the slope finally levels I glance at my Garmin to spy a new top speed of 75kmh. Paddy and Marc must have been triggering speed cameras on their way down.

Saving the best 'til last

We regroup in the Ouzom Valley, where the river flows shallow and white, before bracing ourselves for the Col des Spandelles. This might sound like a 1960s Motown backing group, but it deserves the limelight as it climbs for almost 10km, much of it at an average 9% gradient.

The road is narrow and its surface isn't in the best condition, with patches of gravel and potholes in our path, but at the speed we're riding, it's easy to steer around the obstacles. The ascent is also blissfully quiet compared to its Strava-advertised neighbours; only three cars and no other cyclists pass us. It feels like a hidden gem, with all the physical difficulty of a *hors catégorie* climb, but none of the usual madness or stench of car brakes.

With no race history to its name, there aren't any signs to advise riders on the impending kilometre count, so the road beyond every bend remains a surprise. Views open and close through its wooded slopes with a magician's sleight of hand, and I absolutely love it. There's a feeling of being a pioneer as the road approaches a slab-sided wall of rock without any indication that there will be



Above left: The beautiful wooded switchbacks on the approach to the Col de Spandelles

Above top: The ancient abbey at the heart of the Saint Savin region

Above middle: A bust of Lucien Buysse commemorates his win in one of the toughest ever stages of the Tour de France in 1926

a way through or around it. A lizard basking on a sun-baked rock scuttles away as we approach, and Marc mentions that this is one of the few places where bears still roam in the Pyrenees. It's exhilaratingly wild.

When finally there's no road left to climb, we pause to gaze back at the Aubisque, where the yellow walls of the lunchstop cafe seem to glow against a murderous sky. Peals of thunder chase forks of lightning across the valley.

Paddy and Marc have seen these warning signs before and waste no time in hitting the drops and hurtling down the far side of the Col des Spandelles. I can't keep up, but nor do I linger. There's nothing quite like a descent with serious jeopardy to sharpen downhill skills, as I find myself bunny hopping drainage channels in the road at 50kmh. We blaze through the local spa town of Argelès-Gazost, and tackle the modest ascent to Saint Savin in the big ring as bruised clouds fill the sky overhead.

The first fat raindrops fall about 30 seconds before we reach base, and I'm safely stowing away my bike as the deluge begins to a bass orchestra of thunder. My Garmin reveals we've squeezed over 3,300m of ascent into barely 90km of riding. It wasn't the longest day out in the Pyrenees, but sometimes the best experiences come in small packages. And those vultures never got a feast wrapped in Lycra.

Jonathan Manning is a cycling journalist who is happiest being around birds no bigger than the average seagull

How we got there

TRAVEL

Cyclist flew from Stansted to Lourdes with Ryanair, and then hired a car from Europcar at the airport. It's about a 20km, half-hour drive to Saint Savin.

ACCOMMODATION

We stayed in Saint Savin at Velo Peloton Pyrenees, a superb cycling lodge with bright, airy rooms, fabulous food and a secure bike store and workshop. The lodge is nicely positioned for riding the iconic Pyrenean peaks, with the Hautacam, Tourmalet, Soulor, Aubisque, and Luz Ardiden all within 15km of its front door. If you just wanted to pootle about for some leisurely sightseeing, that's fine too. Rooms cost from €65 (£48) per person per night on a half-board basis. Need more information? Visit velopeloton-cycling-pyrenees.bike.

BIKE HIRE

If you're concerned about entrusting your bike to the hold of an aircraft (and aren't we all?) or simply want to avoid the hassle of dismantling and packing your bike for a flight, Velo Peloton Pyrenees hires out top-quality Lapierre bikes, and renews their fleet each season. The carbon-framed, Ultegra-equipped Xelius EFI 200 costs €50 (£37) per day, and the Di2 Xelius SL 700 costs €60 (£44) per day. See pyreneescyclinglodge.com / bike-rental for more details of the various bike offers.

THANKS

Many thanks to the Hautes-Pyrenees tourist board for all its help and support with this trip, and especially the heroic efforts (that went way beyond the call of duty) of Marc, Celine, Corinne and Jean-Philippe.

INSIDE JOB

Winter training is not just about long, slow miles. Sometimes you need to ignore the bike, grab some key items of gym kit, and get stronger and fitter with a few smart exercises

Words **JAMES WITTS** Photography **DANNY BIRD**



It's easy to assume that when the pros head off to their winter training camps, all they do is ride around in the sunshine all day. But it's not the case. Much of the work they do is off the bike, as Tinkoff-Saxo's trainer Riccardo Colucci tells *Cyclist*: 'It's all to do with conditioning and muscle activation.'

The core facts

As any cycling coach will confirm, core training is the most valuable off-bike work you can do because core strength is a factor in every pedal stroke you make. Although it's your quads, glutes and hamstrings that produce the power, without your core keeping your body stable you will waste increasing amounts of energy rocking from side to side, especially as fatigue kicks in. A three-hour Sunday-morning ride at an average cadence of 80rpm requires 14,400 revolutions of the pedals, each of which must be braced by your core. That's a significant demand being placed on your abdominals, obliques and the muscles around the spine.

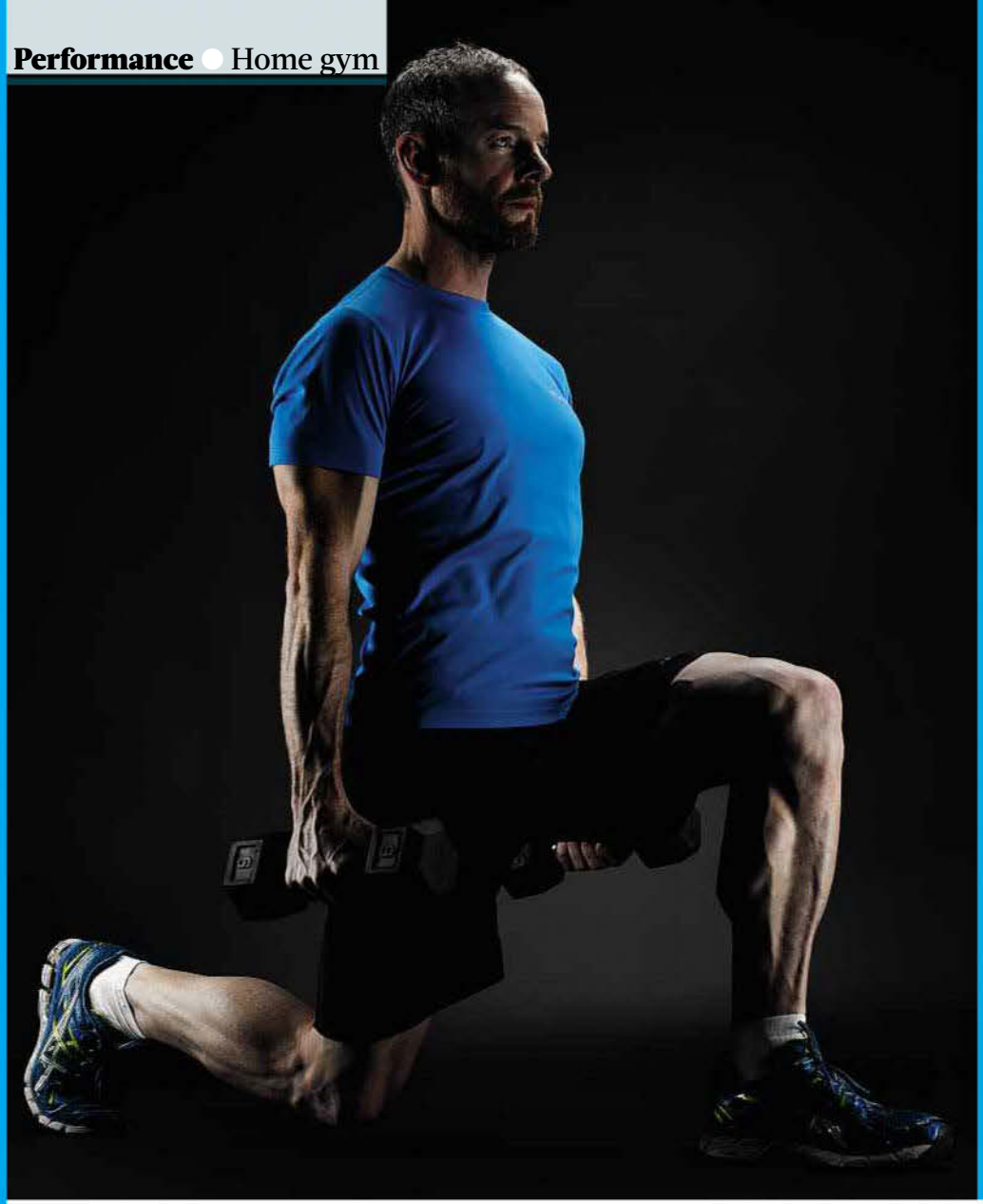
This repetitive load is why professional riders such as BMC Racing's domestique Brent Bookwalter, who racks up nearly 50,000km of training and racing each year, makes core training a key part of his programme. 'Most of my off-the-bike training centres around strengthening the core and keeping the entire body strong and balanced,' he says. 'It also helps me avoid injury.'

It's a fact borne out by a Norwegian study of 116 pro riders that uncovered an uncomfortable truth – that 94% of the participants had suffered from some kind of overuse injury in the past year. Of those, 45% suffered from a lower back injury, with nearly 60% experiencing some form of lower back pain in that period, too. While that's good news for chiropractors' coffers, it's a situation that can be alleviated for pros and amateurs alike.

'There are about eight basic core exercises our riders perform,' says Mattias Reck, trainer to Giant-Alpecin riders such as John Degenkolb and Tom Dumoulin. 'Some riders are really strong and solid but maybe too stiff. Some are tall and skinny and have big problems with their back. We will employ specific exercises to address those concerns.'

Amateur riders display a similar range of strengths and weaknesses, which is why Deck recommends all levels of rider having their bike fit and physical state assessed every so often. But for all riders, the starting point in terms of core training is the ubiquitous plank, where you rest on your elbows and toes keeping your body straight and simply hold that position for as long as you can. Two minutes is a good initial target that will give your stabilising muscles a useful call to action, and you can ➲





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£13, sportsdirect.com
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This 22kg package comes with eight 2.5kg discs, two bars and four spinlock collars for easy weight addition and removal. Perfect for squats and lunges.

COMFORT YOGA MAT
£21.99, decathlon.co.uk
You'll need one of these for doing core work, yoga or pilates. Go for one that's comfortable, doesn't slip and is easy to wipe clean (yoga can be a sweaty business).

up the time as you improve (the Guinness World Record for the plank is an astonishing 5 hours 15 minutes).

'You can adapt this by turning to your side,' adds Reck. 'Once your body's adapted to that, it's time to buy a Swiss Ball, which you place under your feet. Now your body has to "fight" for balance, which puts more strain on the core. You can develop the plank further by adding another Swiss Ball up front to make things even more unstable.'

I'm with the band

Physiotherapist and bike-fitter John Dennis takes core training further, dividing the body's muscular system into 'global mobilisers', such as the quads, glutes and hamstrings that produce rapid movement, and 'global stabilisers' such as your external obliques and glutes (again) that hold you in position and provide a foundation for the mobiliser muscles. Dennis says training at home with a resistance band will strengthen these two key areas, with the greatest benefits coming for the global stabilisers.

'These are deep-lying muscles that work across several joints,' he says. 'The glutes are a huge muscle group that provide stability across your lower limbs as well as your pelvis. These muscles can be very powerful when fulfilling their correct role in the neuromuscular pattern.'

Lack of strength in these stabilising muscles could also be the root of problems that display symptoms elsewhere. Say your right knee has become increasingly painful as you've upped your weekly mileage. Your experienced and well-meaning mate might recommend orthotics because it's worked for someone else, but some well-executed home training could solve the problem and save the expense.

'Something like knee pain could actually emanate from a restriction of hip mobility,' says Dennis. 'How you stabilise yourself on the saddle is vital to executing correct, pain-free movements. By working on your conditioning with exercises like the plank and stretch cords, you'll be more stable in the saddle and will generate more power from the quads and hamstrings.'

'By working on your conditioning, you'll be more stable in the saddle and will generate more power'

CHRIS KING



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'As well as increasing muscle strength, weights can reduce the chances of injury by 50%'

Dennis suggests trying a 'band walk' (see box below) using a stretchband that strengthens these global stabilisers. Chartered physiotherapist Michael Crebbin of cyclephysio.co.uk adds, 'A very useful exercise for cyclists is tying the band on a door handle and keeping it to the left of you, then work on squatting, dipping with the force that's trying to rotate you. This helps quads and your core.' (See box for anti-rotation squat.)

Weights and measures

The muscle micro-tearing effects of weight training have traditionally been seen as counterproductive for cyclists because of a perceived negative impact on subsequent riding sessions, and the loss of precious cycling time while you're pumping iron. But attitudes have changed, according to Reck and many of his contemporaries. Reck cites a 2014 study in the *Scandinavian Journal Of Medicine And Science In Sport* that found heavy resistance training will improve speed and injury resistance. (Many breakthroughs in exercise physiology have come from Scandinavia because of its less-stringent rules when it comes to invasive sample collecting such as muscle biopsies).

'As well as increasing muscle strength, weights can reduce the chances of injury by 50%,' says Elliot Lipski, coach at Sean Yates' training outfit TrainSharp. Both Giant-Alpecin and Movistar told us how heavy squats form the basis of their off-season programme. Unless you have a gym at home that matches Arnie's, you won't be able to recreate the load of a squat machine, but there are useful alternatives you can perform with a set of dumbbells if you incorporate isometric contraction – static exercises where the muscle length doesn't change during contraction. And they don't take long.

'An example is modifying a squat by sidling up to a wall and squatting to the 90° position so you're in a nice, deep sit,' says Crebbin. 'Hold that position for 10 seconds, rest for 10 seconds, and repeat 10 times. Your thighs will soon feel the burn.' That burn is intensified by holding a dumbbell in each arm with your elbows bent and at shoulder height. As quads are responsible for the power phase of the downstroke, the strength gains will translate directly into performance. You should then counter this with hamstring exercises (see below) and stretches, which help to maintain flexibility and optimise your pedal stroke.

Bodyweight and weight-training exercises also strengthen bone density, which is notoriously poor in cyclists who've racked up thousands of miles because the seated nature of cycling doesn't provide the high-impact forces needed to firm up the structure of the bones. Osteoporosis is one of the reasons Chris Boardman had to call time on his racing career.

Older cyclists should definitely integrate weights into their programme. Up to your thirties, muscles grow larger and stronger, then inevitably muscle mass and function decreases. The physically inactive can lose 3-5% of muscle mass per decade. Bodyweight exercises (and running, for that matter) stimulate your endocrine system to produce key strength hormones such as testosterone and human growth hormone and so reduce the muscle-decaying impacts of ageing.

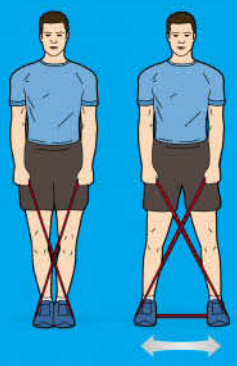
When it comes to working out at home, off-the-bike exercise is more about conditioning and injury-prevention than directly increasing power. But you can't do those big-gear intervals on the turbo if you're laid up with back or knee problems, so time spent on core and stability exercises will allow you to train harder on the bike and deliver power more efficiently for longer when the sun pokes its head out of the winter gloom.

James Witts is a freelance journalist with a core of steel, though hidden beneath a soft outer layer

MOBILE HOME

Three essential resistance-band moves to improve your cycling performance (For all of these do two to three sets of eight to 12 repetitions)

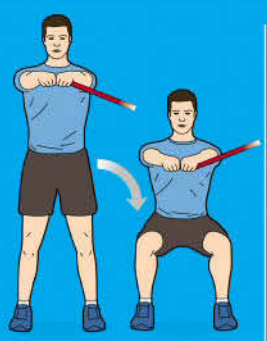
BAND WALK



Stand on the resistance band with your feet together, crossing the band so that your right hand is holding the end that's wrapped under your left foot and vice versa. Keep your core engaged, then step to your left so your feet are shoulder-width apart. Move your right foot to join your left, then repeat for a few steps before changing direction.

What it does Engages many of the deep core muscles that stabilise the pelvis, hips and knees to provide a strong foundation for your limbs to generate power and extend time to fatigue.

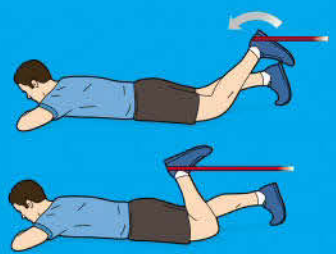
ANTI-ROTATION SQUAT



Attach a resistance band to a door or solid object at about waist height. Stand side-on to the band and hold it under tension out in front of you. Keeping your feet apart, your back straight and your core engaged, squat slowly until your thighs are parallel with the floor, then return to the start.

What it does As well as working the quads, hamstrings and glutes, the rotating force from the resistance band forces you to engage your core muscles as you squat. This will help you maintain a strong pedalling platform on the bike, improving form and delaying tiredness.

HAMSTRING CURL



Attach the resistance band to a fixed point near ground level. Lying face down, hook the band around your heel and draw it smoothly towards your backside feeling the resistance in your hamstring. Pause for a moment, then return smoothly to the start position. Switch the band over and work the other leg.

What it does When cycling, the upper hamstrings near your hips can become stretched, while the lower hamstrings at the knee can become shortened and tight. Hamstring curls help address this imbalance and improve power through the pedal stroke.

HOME & DRY

After two Grand Tour wins, a cancer diagnosis and a professional career spanning two decades, Ivan Basso tells *Cyclist* about bowing out of the pro peloton

Words **PETER STUART** Photography **ALEXANDER RHIND**

Ivan Basso wears a broad smile. It's the same one that has been fixed to his face throughout his career. Whether climbing with Lance Armstrong on the Tourmalet, or dropping Cadel Evans on the Mortirolo, Basso maintained this glowing grin while a world of pressure weighed down on him, leading to him being nicknamed 'The Smiling Assassin'. On the day we meet in London, it is just one month after Basso had a cancerous tumour removed and he's still uncertain whether the cancer has spread, yet his smile is still in place.

'I recovered very well from the operation,' he tells *Cyclist*. 'I have to wait for a scan result to see if it's under control.' His cancer was testicular. A crash on Stage 5 of this year's Tour de France left him with lingering pain. A few days later an inspection showed up a small cancerous lump and on the first rest day he bid goodbye to his teammates, and the Tour, to undergo treatment.

'Everything happened in two days,' Basso recalls. 'I'm lucky. Yes, I have cancer, and yes I have a bad family history of cancer, but there is no metastasis and with this cancer 98% of the patients will live,' he says. 'So there was bad news, but straight away there was good news too.' Ironically his crash may have brought the issue to light at the best possible time. 'I'm really lucky because if I didn't crash maybe I would have gone to the doctor six months later, and then it's a problem.'

Today has been a good day for his recovery. He spent the morning riding into Surrey with SaxoBank employees and clients, part of team sponsor SaxoBank's 'Ride Like a Pro' programme (ridelikeapro.saxobank.com). For Basso, riding has been key to recovery both physically and psychologically. 'When I can ride my bike


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Tinkoff SAXO

Over recent years the Italian has largely played a supporting role to Alberto Contador at Tinkoff-Saxo, but he has no regrets: 'Riding with Alberto is like taking a masters course in cycling at the world's best university'

I feel OK. The bike is part of my life – I can use the bike to race and I can use the bike for my recovery.'

To sum up his positive outlook on life he says simply, 'I think the answer is the big smile.'

Fighting form

As we talk, the weather turns on us and soon rain is lashing down. Basso recollects a similar day in the pro peloton. 'We were in real trouble at the Giro in 2010. We had a long stage, 275km, and the weather was like this all day,' he says, pointing out of the window. 'There was a small climb at the start and we really had to control the race. We entered a long dark tunnel and people started to attack. We couldn't see what was happening. Out of the tunnel we saw a big, big group rounding the corner ahead. It was raining so hard.' He shakes his head with a fond but slightly pained smile. It turned out to be the hardest day in his pro cycling career.

'After two minutes, the DS came through on the radio, telling us there are 56 riders in the front group with a 57-second gap. Astana wouldn't chase, they thought Nibali and I [both Team Liquigas] should close the gap, so it just grew and grew. The break gained 16 minutes. It was a disaster. When we saw there was 225km to go, we had to pray. We pulled on the front all day long and it just kept on raining. Finally, we arrived six minutes or seven minutes behind the break, and we slipped far down the GC.'

'I love the Giro, but when you ride the Tour de France for the first time it's like when you see the woman of your life'

Despite the gruelling day, Basso went on to win that Giro d'Italia. It was his second win in the event, cementing his position among the royalty of Italian cyclists.

'When I was young I loved the Giro because, of course, I am Italian and I loved the pink jersey,' he says. 'But when you ride the Tour de France for the first time it's like when you see the woman of your life,' he adds with widening eyes. Unsurprisingly, winning the Tour was a constant yet ever-elusive target for the Italian.

Having finished in the top 10 four times, and on the podium twice, Basso has been tantalisingly close to the overall win. He even became heir apparent when in 2004 he beat Lance Armstrong to the summit of the Tourmalet on Stage 15 of the Tour, finishing third overall. But it was long before this that his talent had begun to flourish.

'I started to race when I was seven,' he says. 'From seven to 15 it was just small regional races. Then I went into the national team and I started to move around Europe and the world. That year I came second at the Junior World Championships.' Despite that early display of talent it was a few years until Basso was able to showcase his ability in the pro ranks. His breakthrough came with a win at the World U23 Road Race Championships in 1998, at the age of 20. From there it was straight into the pro peloton with Italian team Fassa Bortolo.

'I feel like in the last 16 years, time has run too fast,' he says, but with no flinch from his broad smile. His rise through the pro ranks was swift. In 2002 he finished 11th in the Tour de France, and was seventh in 2003. He moved to CSC-Discovery in 2004 and more success followed. He won the Giro in 2006 by an emphatic margin of over nine minutes, taking three stage wins in the process. A string of top finishes at all three Grand Tours followed and he seemed destined for greatness.

'My idol is Indurain,' Basso states proudly. 'When I was 18 I met him at the Giro. I remember that man well. He was really big and always friendly – a gentleman. I said to myself if one day I'm a professional I would like to be like this.' Basso looked to have the ability to emulate his idol in terms of Grand Tour victories, and in 2005 many expected him to fill the gap left by Armstrong. But fate, and the Spanish police, had other ideas.

Past and future

After finishing second in 2005, Basso approached the 2006 Tour as hot favourite having just notched up his first Giro d'Italia win, giving him every possibility of scoring the elusive Giro-Tour double. It was then that Operacion Puerto intervened and Basso was excluded before the race began. The Spanish police investigation into doping practices among professional athletes implicated Basso, along with Alberto Contador, Alejandro Valverde and Jan Ullrich. The report alleged that he

ON THE MOVE

The cycling career of Ivan Basso

1984 Basso begins cycling and racing at the age of seven.

1993 Takes second place at the Junior Road Race World Championships, aged only 15.

1998 Takes his first major win at the Under-23 World Road Race Championships, and moves into pro racing.

2002 Takes the white jersey at the Tour de France with the Fassa Bortolo team, finishing 11th in the general classification.

2004 Takes a Tour de France podium finish with third place in GC, and beats Lance Armstrong to win Stage 11.

2006 Wins the Giro d'Italia and heads to the Tour de France as favourite after his second-place finish in 2005, but is excluded from the race.

2007 Admits involvement with Dr Fuentes and faces two-year ban.

2009 Makes return to pro peloton and takes fourth place at the Vuelta a Espana and Giro d'Italia.

2010 Wins Giro d'Italia for the second time and finishes ninth in the Tour de France.

2015 Supports Contador in pursuit of Giro-Tour-Vuelta triple, but leaves the Tour de France with testicular cancer in July and retires from professional racing in October.


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Not even the British weather can wipe the smile off Ivan Basso's face. He was famously grinning from ear to ear even when battling Cadel Evans on a brutal climb up Monte Zoncolan on his way to victory in the 2010 Giro

had employed the services of Dr Eufemiano Fuentes to enhance his performances with blood doping. Basso admitted the charge of consulting and paying Fuentes, but denied ever actually doping. He faced a two-year ban.

It was the height of doping prosecutions in the sport. Ironically, even with his prosecution Basso officially remains the highest placed finisher in the 2005 Tour de France, theoretically giving him a right to the yellow jersey after Armstrong's retrospective disqualification. Basso doesn't entertain the idea, though, and nor does he spend much time considering the era of his suspension. 'You must focus on the future and not on the past,' he says, growing slightly morose for the first time. 'I worked hard to rehabilitate myself after my problem. I won all the same things after as I did before the ban. After the disqualification I took second in the Giro, first in the Giro, fourth in Vuelta, fifth in the Tour. To do that I used a system – not to look back, but to look forward.'

Basso's return is one of the better stories of redemption in the sport. 'When I restarted in 2008, I wanted to make a demonstration that all was clear, and I'm lucky because I did, and I won. I think it's best to prove things by what you do, not with talk.' Indeed, some of his best form came in the years after his return.

'You must focus on the future. I worked hard to rehabilitate myself and I won all the same things as I did before the ban'

In 2009 he won the Giro del Trentino and finished fourth in both the Giro d'Italia and Vuelta a Espana. The following year he took the *maglia rosa* in the Giro, beating David Arroyo and Vincenzo Nibali in the process. Climbing the Monte Zoncolan on Stage 15, he made one of the most memorable attacks of his career, riding away from the pack in a two-man breakaway with Cadel Evans. With 3.8km to go, seemingly with a beaming smile, Basso kicked away from Evans after a long bout of shadow boxing, putting 90 seconds between them. Another breakaway on Stage 19 separated him from Arroyo to secure the win.

For Basso, the 2010 Giro win seems to hold special significance, even eclipsing his dominant win in 2006. 'If I had to choose one day that stood out in my career, I think it is when I won the Giro in 2010,' he says. 'We had a very special finish. We arrived in the Arena di Verona, which is like a colosseum. I finished the time-trial and I went into the arena and when I stopped the bike and clipped out of the pedals I picked up my daughter and son as the winner of the race. Can you imagine?'

Basso describes a different world of cycling after his return, compared to the years before. 'What has changed in the last 10 years is that many teams are more professional. The power you see on the television is not only of the captain, but it's the team. Sky is an example – they don't work only for Froome, they work for each other to be a stronger team. Tinkoff-Saxo is another example, with Contador, or Sagan, or Kreuziger – we have a lot of very good riders.'

Supporting role

Indeed, in Tinkoff-Saxo's superteam, Basso has spent a few years playing super-domestique to Contador, whom he greatly admires. It seems odd for such an eminent rider to work in service of another, but Basso doesn't give it a second thought. 'We work really hard to support him because he is the best rider for the Grand Tours,' he says sharply. His respect for Contador is striking, and clearly even among Grand Tour winners, Basso considers Contador exceptional. 'Riding with Alberto is like taking a masters course in cycling at the world's best university.'

Basso seems content, then, to be part of the machine rather than striving for individual glory. It's not without its challenges, however. 'Sometimes the wind is on your back and everything is going well, but you have to be ready to go in the opposite direction the day after.' The last few years have perhaps seen seasons with less wind on the back, as Basso has been plagued with a string of injuries, including a debilitating saddle sore in 2013 that ruled him out of the Giro d'Italia.

On the day we speak, Basso has yet to announce his retirement in early October and is still dreaming of a return, but laments his recent form. 'I don't feel the age, but I'm not super happy about my condition. I work hard and I don't get what I expect.' Writing soon after in his local newspaper, *La Provincia de Varese*,

BASSO ON...

...Alberto Contador

'When you have a super champion like Alberto it's easy to try something special like we did this year with attempting all three Tours. He's so strong in the legs, but more than just the legs he's a champion in the head. Alberto and I pass a lot of the day together. It's like travelling around the world as a family, and we try to support each other in the good moments and the bad moments.'

...Peter Sagan

'The limit of a rider like Peter is inconceivable – he can do anything. Age is on his side. I'm sure he'll improve a lot. He has enough power to win, but for sure the head and experience can make a difference in the big races. He finishes second and third not because he's less strong than the winner but because he has bad luck and maybe lacks the real experience. He doesn't need any extra power, he just needs more luck.'

...Camaraderie in the peloton

'It's nice because cycling is a big world but it's also really small. We make a big fight in the race all the time, but in the end we are a big bunch of friends. It's a big sacrifice and we suffer together all around the world and everybody knows how many sacrifices you have to make to be there. That said, from kilometre zero to the finish line we are not friends.'





After struggling to work out why his form was fading, Basso opted to retire from racing in October and has taken on a new role as a coach at Tinkoff-Saxo

he confessed to constantly searching for reasons behind his fading form, and imagining ways in which he might find his way back to great performances. In the end, though, he concedes that his best days are behind him, and a few days after our interview he announces that his career as a pro rider is over. He is also, thankfully, given the all-clear from cancer.

I wonder whether he will be glad to see the back of the painful days in the saddle, especially given his appetite for attacking on savage gradients. When I put the question to him, he looks slightly puzzled for a moment. 'I never suffer on the bike,' he says. 'If you are really suffering on the bike you are an idiot, because nobody keeps you like that. You decide yourself.' Putting it in perspective, he goes on, 'Suffering is when you are sick, or when you have a big problem in your life. When you can't go on the bike you understand how important that is.'

There's no surprise, then, that Basso intends to not stray too far from his bike. 'I am a cyclist for life,' he says. 'I think I will have to do something close to the bike. I don't have any experience in anything else. I think the most important thing is that whatever I do, for sure I will do it with the same approach and passion as I have for cycling.

'In my opinion, the bike is an education when you are young, and it makes you a better man when you become older.'

He describes his morning with the SaxoBank corporate clients as part of a programme that sees Tinkoff Saxo riders sharing training advice with financial traders, and the bankers sharing trading advice with riders. 'Here we have a personal banker, someone that earns a million Euros a month,' Basso says. 'He can take a private jet to Paris for lunch, but instead he's on the bike with me for three hours. With money you can buy anything, but you cannot buy happiness.'

'The bike is an education when you are young, and it makes you a better man when you become older'

In retirement Basso has already landed a role at Tinkoff-Saxo in a coaching and technical capacity. Will life in the team car be easier than racing on the bike? He considers the question for a moment: 'The hardest stage is always the one in front of you,' he says with a smile.

Peter Stuart is staff writer for Cyclist *and would welcome the opportunity to attempt to buy happiness with money*

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Hitting the Peaks

In the heart of England, *Cyclist* discovers a ride that is as testing as it is beautiful, with a tale around every corner

Words **STU BOWERS** Photography **GEOFF WAUGH**





I seem to have ridden straight into the opening credits of *Postman Pat*. Just up ahead above the dry stone walls, with rolling grassy hills in the background, I can see the top half of a small red Royal Mail delivery van making its way along the narrow road towards the next cottage. I'm too far away to see if the driver has a cat with him, but I wouldn't be surprised.

I'm in Derbyshire, in what is known as the High Peak, having started out a short while ago from Hayfield – a village with superb views of the Kinder Scout Nature Reserve. My guide today is local cycling legend Nick Craig, a former pro racer and double Olympian with several national titles to his name. It's a pleasure to be in such esteemed company, although I'm hoping he isn't planning to take me on one of his more punishing loops around the Peak District.

Peaks and troughs

Follow the ups and downs of *Cyclist*'s route in the High Peak

To download the route go to cyclist.co.uk/42peaks. From Hayfield head south to Chapel-en-le-Frith, then west towards Whaley Bridge. Follow the A5004 towards Buxton, but bear right around the Errwood Reservoir and over the Cat and Fiddle pass towards Allgreave. After Flash, cross the A53 towards Longnor. Cross Glutton Bridge and turn right to Earl Sterndale and Monyash, then cross the A6 to Ashford-in-the-Water. After Tideswell, continue north to Hope, and on to the Ladybower reservoir, where the Snake Pass takes you towards Glossop. Turn left onto Derbyshire Level to join the A624 back to Hayfield.





Left: The haul up Eccles Peak at the start of the ride gets the legs going, and rewards *Cyclist* with stunning views over the Peak District National Park

Below right: The climb away from Errwood Reservoir will be familiar to anyone who has ridden L'Eroica Britannia

The landscape is like a patchwork quilt, with segments of arable land divided by the dry stone walls that run for miles and miles across the hillsides and open moorland. The hills might not be considered mountainous in terms of their overall altitude but they are often steep, rising sharply from the floor of deep glacial valleys.

Park rangers

We head south, and after grazing the outskirts of Chapel-en-le-Frith, dubbed the capital of the Peak District, the climb up to Eccles Pike is an early wake-up call for our legs. The road is narrow and when I hear the approach of an oncoming car I veer over towards the gutter to make space, so it's with a certain amount of surprise that I watch as the driver of the vehicle, a Porsche no less, practically buries it in the hedgerow to give us more room to pass.



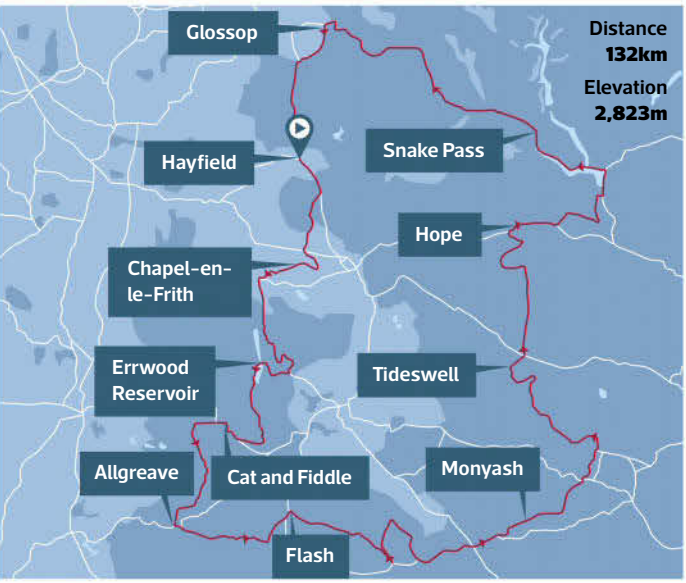
The driver of the vehicle, a Porsche no less, practically buries it in the hedgerow to give us more room

'You wouldn't get that in Surrey,' I say to Nick. Friendly car drivers are simply an extra blessing on a day that is giving us clear skies and warm sunshine, topped off by the view when we reach the Eccles Pike summit, which overlooks the westerly side of the Peak District National Park. In the distance a reservoir shimmers like a mirror and Nick tells me how his two sons learned to sail on it. As someone who lives near the coast, I find it odd to think of this spot as a place to come sailing, seeing as we're about as far from the sea as it's possible to be in the UK.

We head in the direction of Buxton and eventually find ourselves on the aptly named Long Hill. It's a fairly busy road, but wide enough for us to not feel intimidated by passing traffic as it snakes its way up the valley. In the distance to our right is a ridge of hills, and Nick informs me that this is what we are heading for.

Descending to the valley floor once more, the magnificent sight of the Errwood Reservoir comes into view. I have a sudden feeling of deja vu and I realise I've been here before when I took part in the L'Eroica Britannia sportive – Britain's version of the Italian vintage cycle event – and we follow the same route for the next few kilometres as we wind our way along the valley on the far side of the reservoir, following the course of the River Goyt that feeds it.

The final part of this road climbs up to the Cat and Fiddle Inn, a famous landmark around these parts, sitting exposed at the top one of the high points of the A537. It's frequented by motorcyclists and cyclists alike, who share a love for the sinuous roads. As we head beyond Allgreave on the road to Gradbach, we pass







Both David Millar and Rob Hayles have lived and trained in these hills, and Ian Stannard lives down the road

a small stone cottage called The Eagle and Child. Local legend has it that the house was named because an eagle once flew off with a baby near here. The truth of the tale is uncertain, but perhaps of more relevance to us today is that it was once a cafe and regular stopping point for cyclists of the likes of Beryl Burton and Reg Harris, both multiple World Champions, who would enjoy a mid-ride cuppa here.

The cafe has long since closed its doors, but if it were still open today the chances are some other cycling stars would have passed through. The Peak District's proximity to Manchester's National Cycling Centre means these roads are often used as a training ground by the cream of British Cycling. Aside from my chaperone, both David Millar and Rob Hayles have lived and trained in these hills from a base in Hayfield, and Team Sky's Ian Stannard lives just down the road. This morning we also passed close by the house of Steve Peters, sports psychiatrist to Team Sky and author of *The Chimp Paradox*.

Cake and decapitations

The narrow strip of tarmac we're following is again bounded by dry stone walls preventing the vast expanses of moorland from engulfing everything, and there's a beautiful feeling of spaciousness. We reach the village of Flash, on the Staffordshire Moorlands, and a sign proudly proclaims it to be 'the highest village in Britain, 1,518ft above sea level'. The Peak District is well known for its varying climates that depend on whether you're in the shelter of the hills or exposed to the chilling, sweeping winds on higher ground. To illustrate the point, as we pass through the village Nick says, 'If they're in Speedos in Stockport, then we'll



The Monsal Trail viaduct is a scenic highlight of the route

Below: Our favourite type of cobbles? A cafe called Cobbles



The rider's ride

Trek Émonda ALR 6, £1,400, trekbikes.com

Knowing that the Peak District would dish up a stream of climbs, and that I'd be in the company of an Olympic athlete, it did occur to me I should have selected a superlight carbon frame rather than a mid-priced aluminium bike. But as soon as I got on the Trek Émonda ALR, my fears were allayed. It felt spritely on the steeper inclines, dealing solidly with my standing efforts and in no way holding me back when I needed an extra kick, and downhill it remained surefooted. For less than the cost of some carbon wheels the Émonda ALR 6 is a class act.









be in shorts and T-shirts in Hayfield, but in Flash you'll still need a jacket.'

With around 50km of our 132km loop covered, it's time for our first coffee stop, and on Nick's recommendation we pull up in Longnor outside the Cobbles Cafe. It's an excellent choice. Not only is the coffee and cake exceptional, but it also has a pile of cycling magazines too. There, on the top of the pile, is a copy of *Cyclist*. Nick swears that this was not planted for our benefit.

After a good fill of coffee, milkshake and a couple of toasted tea cakes, the climb back out of Longnor feels like a struggle, and I can't help smirking when the next village we reach is rather appropriately named Glutton.

'The only way to keep a woman quiet is to cut off her head,' Nick suddenly proclaims as we pass through Earl Sterndale. I'm momentarily taken aback, until I see he's pointing at The Quiet Woman pub at the side of the road. Its hanging sign displays a headless woman and the words, 'Soft words turneth away wrath.' The pub is over

Far right: Descending Snake Pass towards Glossop is a chance to increase the ride's average speed considerably

400 years old and owes its dubious name to a talkative young lady who was decapitated to keep her quiet. Nick and I continue on past the pub wordlessly, both inwardly thankful that our respective partners are not here to pass comment on the curious case of The Quiet Woman.

Head in the clouds

Watched by cows and grazing sheep, we press on to Monsal Head. Just when I was thinking that the scenery couldn't get any better, the view down the trail almost stops me in my tracks. The spectacular viaduct ahead of us once supported the railway lines that took passengers to and from Manchester, plus the lead mining freight trains that passed through the River Wye valley. The ice cream van is enticing too, but we decide to carry on into the valley and past the enormous Arkwright Mill, once a cotton mill and another testament to the area's industrial history.

When we reach Cressbrook, the houses are decorated with bunting and coloured flags. 'It's well dressing week,' says Nick, explaining the tradition unique to Derbyshire and the Peak District where from May to September the towns and villages create intricate art installations around their wells. The 'dressings' often celebrate biblical scenes or special anniversaries, and we stop briefly to admire the hard work the residents of Cressbrook have put in on their well.

Another 5km further on, the Vanilla Kitchen coffee shop in Tideswell is too alluring to miss, and with 82km covered we feel justified in stopping. The sun is still shining and we can enjoy our calorie replenishment al fresco.

After plentiful portions of homity pie followed by chocolate and Guinness cake washed down with cappuccinos, we're in no particular hurry to sprint off up the road, so we saunter past Tideswell's impressive 14th century church (known locally as the Cathedral of the Peak, although not officially a cathedral), and roll slowly out of the town heading north-west.

Next our route takes us towards the famous Ladybower Reservoir, along the course of the River Derwent to meet the Ladybower Dam. The



Just when I was thinking that the scenery couldn't get any better, the view down the trail almost stops me in my tracks







great reservoirs around this area, Derwent and Ladybower, were famously used as the training ground for RAF 617 Squadron, practising the deployment of Barnes Wallis's bouncing bombs that were used to attack German dams during the Dambuster raids of the Second World War.

The evening light is beginning to cast long shadows, and the waters of the reservoir glisten as we approach the start of the Snake Pass. The road is closed to traffic for essential repairs, but Nick knows a man who knows a man, and thanks to a prior agreement (the price of which was a six-pack of cider), we have permission to pass and continue on our way.

Most of the climbs we've encountered so far have been short and steep, making the route profile look like a set of dragon's teeth, but the Snake Pass is different. It ascends gradually with gradients mostly between 4-7% for the 15km to its summit at around 500m above sea level. The lower reaches are tree lined, but higher up the climb we emerge once more into open moorland. Nick tells me the tale of an American World War Two Superfortress bomber that crashed on top of the Snake Pass in 1948, and because it was built predominantly from aluminum, which doesn't corrode, parts of its wrecked fuselage and engines can still be found in the peaty landscape, not too far from the road.

With the final challenge over, we can enjoy the fast descent on the wide and winding road (it's not called Snake Pass for nothing). Safe in the knowledge that there will be no traffic on the closed road, we throw caution to the wind and dive into the corners for a truly thrilling descent.

Arriving back at our hotel in Hayfield it's relatively quiet, with just a few locals sipping pints in the sun-drenched courtyard. It's a very different scene to the one that greeted us when we arrived the previous night. Then it was standing room only and three deep at the bar, as a local fell race had just finished in the village and the bulk of the competitors were eagerly seeking a recovery pint.

Time for us to do the same.

Stu Bowers is deputy editor of Cyclist *and now takes a six-pack of cider on every ride, just in case of closed roads*

Do it yourself

TRAVEL
Hayfield sits between Glossop and Buxton in the heart of the Peak District National Park. Both towns are served by trains from Manchester or Stockport. Manchester airport is also less than 40km away.

ACCOMMODATION
Cyclist stayed at the Royal Hotel (theroyalathayfield.com), a spacious, clean and modern hotel serving a range of hearty choices for breakfast. Rooms cost from £60 single and £80 double. They are very used to hosting runners and cyclists.

THANKS
We're grateful to the local tourist board – visitpeakdistrict.com – for all the guidance and info that made this trip possible. Big thanks also to Nick Craig, whose knowledge of the local roads provided us with an unforgettable loop, and to Kate, who demonstrated admirable patience while chauffeuring our photographer.

HEART & SOUL

In a small industrial unit in a sleepy town, two Italian craftsmen are building something with meaning

Words STEVE WESTLAKE
Photography FRED MACGREGOR

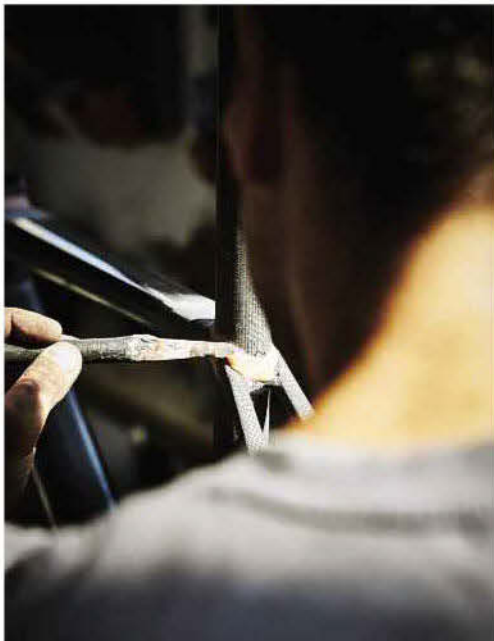
The atmosphere in the DeAnima workshop has changed in a flash. Gone is the easy Italian banter and laughter of a few minutes ago, and in its place is serious concentration. The two men in coincidental grey shirts – who make up the entire workforce – are now working rapidly on the raw carbon frame, wrapping tube joints in pieces of prepreg, trimming and honing the alignment of the fibres for maximum strength and a perfect finish. A handcrafted bike frame is taking shape.

'Sorry, but we have to work fast now, especially because it's so hot,' says Gianni Pegoretti, his eyes fixed intently on the frame in front of him. There's no hint of panic, but this part of the job clearly demands skill, precision and speed. The reason for the abrupt change of tempo is due to the nature of prepreg carbon











Carbon fibre is an advanced material, but it can be pieced together by hand just like a traditional bicycle, as DeAnima is proving

fibre. Once removed from the freezer, the resin starts to cure and harden, limiting the working time available. The situation is given extra urgency by the ambient air temperature, which on this day in the Trento region of Italy is reaching 38°C in the shade, and more like 40 in the workshop. I'm sweating just watching.

Right from the start

DeAnima as a brand is a little over a year old, although the driving force behind it, Gianni Pegoretti, has been building frames for 20 years. You probably recognise the name Pegoretti. Gianni's brother, Dario, is the framebuilder behind Pegoretti bikes, and the brothers worked together for nine years. You may also have come across DeAnima at the Bespoked Handmade Bicycle Show in April this year in Bristol, where the DeAnima 'Unblended' was an artisan carbon fibre bike amid a sea of metal.

'My brother was making frames from the early 70s in Rome with Milani – one of the main suppliers for Bianchi, Colnago and other brands,' says Gianni later at lunch when the joints are safely wrapped and the frame is curing in the oven. 'Then in 1996 Dario and I started working together.'

It was a partnership that resulted in some of the finest handcrafted frames in the world, until the brothers went their separate ways. 'After 2005 our paths divided – Dario had his own road and I had my road,' he says with noticeable brevity.

It wasn't a wholly amicable split and the pair aren't talking to this day, except through solicitors, but it led to Gianni being recruited by an organisation called San Patrignano (pronounced Patriano), which would eventually lead to the partnership with Antonio Attanasio and the creation of DeAnima.

San Patrignano's mission is to rehabilitate young people with serious drug problems. The residential centres provide accommodation, structure and the teaching of a trade, all designed to provide focus, skill and a feeling of inclusion and worth to its troubled residents. Gianni and Dario had previously given the local San Patrignano community their support, and after their split Gianni was approached to run the bicycle framebuilding operation. 'You were the boss?' I ask. He shakes his head. 'For me "chief", '"boss", "manager"... I don't like these words. I just taught guys in the workshop, and I stayed for nine years. It was not only frames we were building – we rebuilt people – and this is probably the most important thing I have done in my life.'

Antonio was one of his star pupils who grew into a skilled framebuilder and bike painter. It was during this period that the idea for DeAnima took shape, with the help of Matt Cazzaniga, who previously worked with the Pegoretti brothers on sales and marketing, and imported their bikes into the UK. When the local San Patrignano community closed and moved to Rimini, it was the impetus they needed.

'We knew it was the right time,' says Gianni. 'Our friend Tiziano Zullo [the famous framebuilder from Verona] helped us find machines for the workshop and we began.'

Different by design

Cyclist has visited many factories in the bicycle industry where clothing, helmets, gels, sunglasses and of course bicycles are built. Some places are characterised by clinical efficiency, cordoned off secret areas and soft cushions of marketing fluff. DeAnima's modest workshop in a small industrial unit in the village of Pergine Valsugana, 10km from Trento, is different. Two men building bikes, another promoting the nascent brand and trying to create something traditional, yet different. The company name hints at the reasoning behind the venture. *De Anima* is a work by Aristotle that translates as 'On The Soul' in which the philosopher explores the concept of the immortal soul within all living things.

'We want to preserve the old Italian methods of working – the Italian geometry'

'Our motivation is the same as it was at San Patrignano and with my brother Dario,' says Gianni. 'To preserve the old Italian methods of working – the Italian geometry. The cycling business has changed and in Italy we have lost this method. We have only three or four little artisan builders like this now. But the historic brands – Pinarello, De Rosa, partly Colnago – have lost the personal method and embraced the new philosophy of mass production, and for us this is not the soul of framebuilding.

'Probably our idea is a harder way of doing things, but if I design a bike and then I go to the bank and they give me the money for my business and I put Pegoretti stickers on Chinese frames... this is too simple, and this is not my way of thinking. We will grow and make a small brand with our own idea.'

Above right: The tubeset is produced exclusively for DeAnima in Venice. The tubes are then cut to length for each customer, glued and wrapped in prepreg carbon fibre. The result is a unique, bespoke carbon fibre bike









THE MEN BEHIND DEANIMA

A team of three are following their hearts and building a business making handmade carbon fibre bikes

Matt Cazzaniga (left)
A co-founder of DeAnima who worked previously with Dario and Gianni Pegoretti on imports, sales and marketing. 'Most of DeAnima's customers are people who've ridden for a few years,' he says. 'They aren't usually new to cycling and they want to know how their bike is made and what's gone into it. These days nobody really knows who's made anything, but we hope we're doing something a little bit different.'

Antonio Attanasio (middle)
Antonio is a framebuilder and painter who was trained by Gianni at the San Patrignano community – a residential project in Italy run on a charitable basis. The intention is to rehabilitate young people with drug problems by giving them structure, skills and self respect during their four-year stay. It worked for Antonio, and many others. (For more information go to sanpatrignano.org)

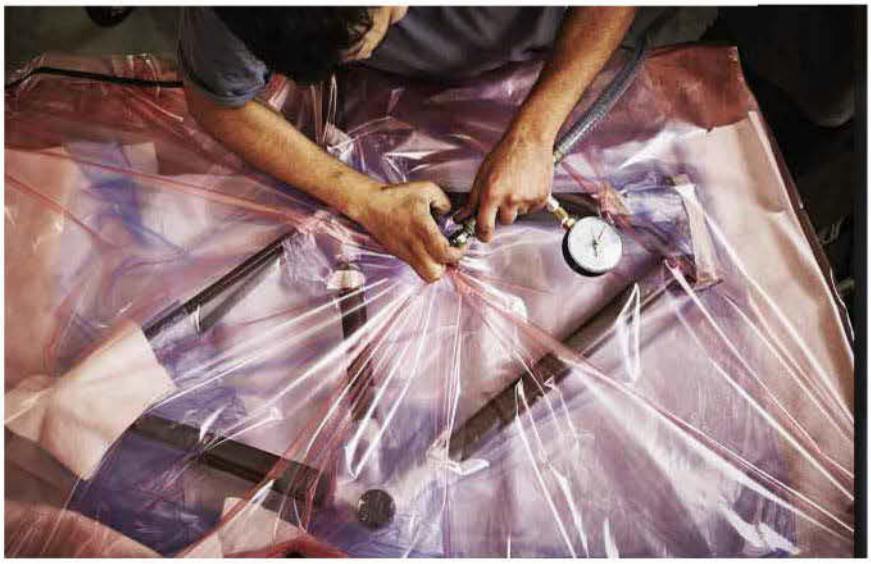
Gianni Pegoretti (right)
Brother of the famous Dario Pegoretti, the pair worked together for nine years from 1996 crafting some of the world's finest metal frames. An artisan in steel, aluminium and carbon, Gianni has designed the 'Unblended' frame with help from local materials engineer Oswald Gasser from Trento University. 'Our way of working is probably not the easiest,' he says, 'but we believe in what we do.'













FINISHED ARTICLE

You won't see too many of these out on the road, yet

The Unblended is available in standard sizes from 48–62cm, but the DeAnima team much prefers to build it fully bespoke in consultation with the customer. The frame weighs 850g for a size 55cm – not the lightest out there, but that was never the intention. 'We are not trying to revolutionise anything – we are using modern materials to build something with traditional methods,' says DeAnima's Matt Cazzaniga. The fork is an open mould item sourced from China. In the last year the team has produced around 100 bikes branded DeAnima and, like many artisan framebuilders, they work for other brands too. The Unblended costs €3,250 (approx £2,400) for frame and fork. See an upcoming issue of *Cyclist* for a full review where we'll reveal how this most Italian of bikes handles British roads.



Aeronautical glue is used to hold the tubes in place and then machined to create a smooth junction, ready for wrapping. The joints are bandaged with white 'peelply' fabric to absorb any excess resin squeezed out during the curing stage, and wrapped in thermal tape that will shrink when heated and apply extra pressure to the joints. Then it's into the vacuum bag ready for the oven

DeAnima is not just an exercise in nostalgia, though, as reflected in the choice of material. They do make steel bikes here, but carbon is the primary focus. 'When you use steel and aluminium, you make tubesets in partnership with Dedacciai or Columbus and you can't control the whole process. But with carbon you can, and this is a good thing for us.'

The tubeset was designed in conjunction with Oswald Gasser, a composites engineer from nearby Trento University, who designed the lay-up schedule in conjunction with Gianni.

They don't have an autoclave on site so the tubeset is made 130km away in Venice exclusively for DeAnima. Gianni orders 30 or 40 tubesets at a time and each comes in five pieces. 'It's not monocoque because for the Italian market the most important thing is to have bespoke geometry – and we achieve this by wrapping the joints with carbon,' he says. 'We have the head tube and down tube made together because this angle is the same with all the frame sizes, from small to XXL.'

Once the geometry is decided according to each customer's needs, the tubes are cut to length and the joints are mitred so they mesh perfectly. The head tube/down tube piece is put into a jig and bonded to the top tube, seat tube and bottom bracket (using aeronautical glue produced by 3M to ensure it doesn't react with the carbon fibre). This is then put into the oven for 20mins at 60°C to set the glue.

Then it's back onto the jig, where the seatstays are glued into place using a different guide to ensure alignment and correct brake bridge height. Once hardened by another stint in the oven, the glue is carefully machined to ensure the curves around the tube joints are smooth so that when they are wrapped with carbon there are no tight angles that would potentially weaken the carbon.

Heat of the moment

Now comes the crux. Prepreg carbon is removed from the freezer and the pieces are placed on the joints, which is when Gianni and Antonio move into the big ring and up their pace. It is this carbon fibre wrapping of the joints, not the initial gluing, that gives the frame its strength.

'Three layers is what you need to have the right structure,' says Gianni as he works. Moving swiftly around the frame to find the ideal angle of attack, they ease the pieces into place, massage them onto the tubes to achieve perfect adhesion and exact alignment of the plies to give the pleasing impression of one seamless piece of carbon.

The carefully prepared frame is slid into a vacuum bag, the air is removed and the bag is put into the oven and cured according to a precise temperature gradient. The vacuum pump continues to draw out the air throughout the process to ensure the joints remain under constant pressure.

Once cured, the joints are stripped, smoothed and cleaned ready for painting, with Antonio wielding the airbrush. It's a laborious and meticulous process, and is about as far from the mass production lines of the Far East as you can get. There's no shift work, no automated production lines, no layers of management, just three men working with heart and soul.

'In the past the bicycle market was small,' Gianni says as he sands the finished frame ready for painting. 'Italy, France, Germany, Holland, Belgium... This was the world market. Today it's Australia, Japan, China, Europe, South Africa – all the world uses bikes.'

It's about as far from the mass production lines of the Far East as you can get

'When I started with my brother, Italy was the big player, but the Italian way is not to make big brands – probably Fiat is our biggest company. We don't have the mentality to continue growing because the chief of the organisation wants to control it all. Italians have the mentality of a smaller brand.'

Final reflections

The heat of the day subsides. As Gianni drives me back to Venice airport he says he's always lived in this area, and passing the beauty of the lakes and mountains it's easy to see why he's stayed.

We have some time to spare so he makes a detour into Bassano del Grappa and gives me a short tour of the town where grappa was invented, the highlight being the Ponte Vecchio wooden bridge, originally built by hand in the 16th century. He won't accept payment when I try to buy the Aperol Spritz in a sleepy bar cafe. He's a calm, friendly craftsman who clearly cares deeply about his place in the world.

'Probably I'm old, but for me it's better to be a black sheep in a group of white sheep,' he says as he sips his Spritz. 'This thinking is clear to see with our work.'

Steve Westlake is production editor of Cyclist, *which is also handcrafted from the soul*

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Tour diaries...
THE SOIGNEUR



The modern professional cycling team is a hi-tech environment. Ultra-lightweight bikes made from carbon fibre are ridden by athletes honed to physical perfection by intricately controlled training protocols, while every aspect of their ride is captured in data form and analysed by sports scientists.

On paper, the 198 starters of the 2015 Tour de France could have ridden straight out of *Blade Runner* into the Brittany countryside. But one element of the pro team has remained pretty much constant since Maurice Garin won the first edition back in 1903: the caretaker or, as they're more romantically known, the soigneur.

Endless job role

The soigneur is the chameleon of professional cycling, their role encompassing the physical, the psychological and the emotional. Without them, the riders would be ascending Alpe d'Huez in stinking, sweat-stained kit, with no food in their bellies and too much lactic acid in their legs. What's more, without the soigneurs, most riders would be mentally worn down by the intense pressure of their job.

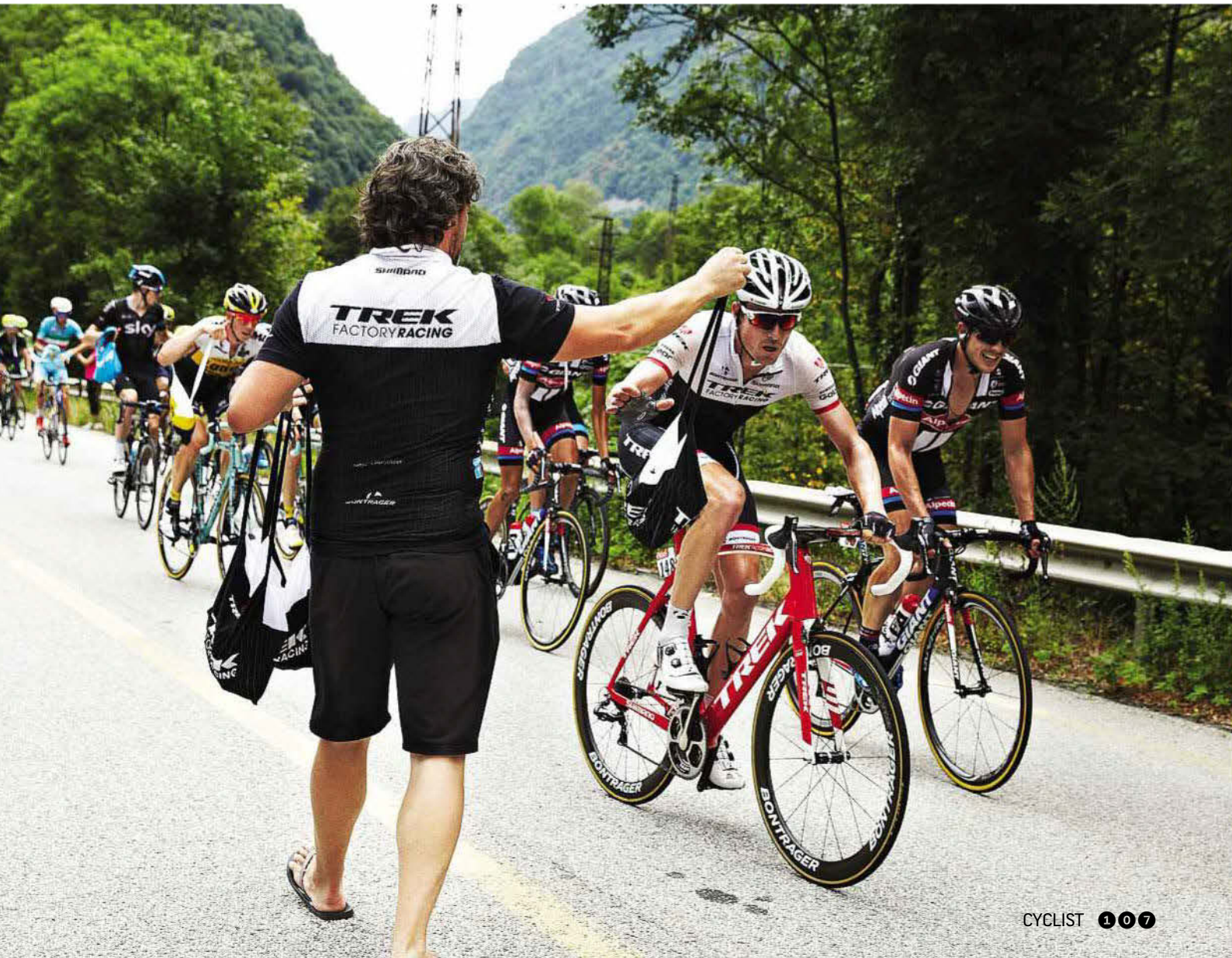
'We're not colleagues, we're good friends,' explains Germany's Sabine Lueber of her relationship with the riders. She is one of five soigneurs on



Left: Sabine Lueber and fellow soigneur Josué Arán prepare the riders' nutrition for the feed zone

Part three of *Cyclist*'s look behind the scenes of a pro team at the Tour de France takes us to Trek Factory Racing's massage table, kitchen and feedzone

Words **JAMES WITTS** Photography **JUAN TRUJILLO ANDRADES**









duty for the Trek Factory Racing team at this year's race.

'We have a lot of highs and lows together. That's especially true of my relationship with Fabian [Cancellara]. I have been his masseuse for many years and we've grown close. Both of our families have grown close.'

Lueber's not exaggerating. They've holidayed together, and her partner, Italian Luca Prota, is chairman of 'cancellara4ever', the official fan club of Switzerland's superstar cyclist. Cancellara's disciples around the world were brought together by Prota, who founded the group in 2011. The club's active members number over 600 with 10,000-plus followers on social media. Many of the members ride together, dine together and presumably wear Cancellara merchandise together. (On cancellara4ever.ch you can purchase 'Go Fabian Cancellara Go' banners, Cancellara stickers and bibshorts with cancellara4ever printed just above the backside.)

'I think that's one of the reasons my partner visits me so much!' says Lueber. 'Although that might stop next year as it looks likely that 2016 will be Fabian's last season.'

For Prota and the 'Cancellarti' that news must have come as a thunderbolt. Will the fan club survive a race calendar shorn of its hero? (This author suggests it will – I once inadvertently stumbled upon a hotel get-together with the Anita Dobson fan club. The group formed when Dobson played the alcoholic Angie Watts in *EastEnders* back in the 1980s. Dobson attended the event and was charming – and sober.)

'If Fabian retires, that will probably be my time to call it a day. I have been a soigneur for over 15 years'

'If Fabian does retire, that will probably be my time to call it a day too,' says Lueber. 'I'm 40 now and have been a soigneur for over 15 years. The time is coming to move on.' Whether that's Lueber or Prota's decision remains behind the closed doors of Lueber's home near the Swiss border, but a look at Lueber's history in the sport suggests she'll retire when she's ready – with or without Fabian.

'When I started, it wasn't easy as many of the cycling community thought that being a soigneur was a man's job,' she says. 'I had to prove ●



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myself over and over again. But I knew I could do it and hopefully I helped pave the way as there are far more women in teams these days.'

Whatever your chromosome composition, working away from home for more than 200 days each year is going to build resilience. It's the same with the Tour schedule where 12-hour-plus days are the norm, usually beginning at 6.30am. 'That's when I go running with a few of the team,' she says. 'We chat but it also gives you time for yourself. You need that or you'll go crazy with the frenetic nature of the race.'

It's a common theme among all the Trek Factory team staff that *Cyclist* interviewed – how chaotic life at the Tour de France is. 'You have to be strong and blank out the peripheral stuff and just get on with your job,' says Lueber. And this morning in Gap, on Stage 18's 186.5km route to Saint-Jean-de-Maurienne, that means making the staff's baguettes. 'I'm also preparing the riders' feed bags for tomorrow, which will consist of bars, bottles and rice cakes. We always try to prepare the day before.'

Snacks for the journey

There's not much room in Trek's tiny kitchen on the mechanic's bus. While Lueber prepares the bags, her fellow soigneur, Josué (pronounced 'Joshu') Arán, makes the rice cakes. A rice cooker is an integral appliance of every team's kitchen for delivering these palatable carbohydrate morsels to the riders, as revealed upon opening the Trek freezer.

'Have you seen the hotel? Last night I was in an Ibis. There was hardly enough room to unfold the massage table but at least it was clean'

Small silver wraps with 'sweet' or 'savoury' are packed in to bursting point, ready for future consumption. Josué is to rice cakes what Heston Blumenthal is to bacon and egg ice cream. The blueberry rice cake is a triumph, and he will spend the rest of the day driving to the finish line to hand out protein-packed recovery drinks and bike jackets to Bauke Mollema and co.









Fellow Trek soigneurs Stefano Cerea and Elvio Barcella will drive ahead of the riders to the feedzone situated in Rioupéroux, a village in the department of Isère, and 78km from the start. Rather cutely, the Tour roadbook symbolises the feedzone on the day's map with a knife and fork squeezed into a tiny blue circle.

As for Lueber, after three nights in Gap she's driving to the next team hotel in Le Corbier. For the many cars not accredited to follow the race route this involves a 200km 'off-course' adventure into Italy, but only after negotiating the tight roads of the 2km high Col de Montgenevre. The route then returns to France via the eight-mile Fréjus tunnel.

'That's nothing,' Lueber tells me on arrival at Le Corbier. 'From here I'll drive to Paris, which is about 700km. That's not too bad, though – anything under 1,000km isn't particularly long.'

Lueber is not as pragmatic about the state of the hotel rooms. When it comes to allocating hotels, all the team names are put into a hat and selected at random, meaning the quality of their accommodation can vary markedly. While hotels are well-serviced in a huge city such as Paris, in this small Alpine corner things are a touch more *rudimentaire*.

'Have you seen the hotel?' Lueber says, an exaggerated frown spreading over her tanned cheeks. 'It's so dirty in there and I've had enough of that after all these years. Last night I was in an Ibis. There was hardly enough room to unfold the massage table but at least it was clean. Here it's tired and dusty.'

Soigneurs aren't only responsible for the riders' health and wellbeing – they also muck in to help with the logistics of moving the riders' kit and preparing bags of food and drink for each stage

Lueber should know. While AG2R's Romain Bardet pedals to stage victory, Lueber checks the rooms are designated as they should be – in other words, that the soigneurs are in rooms near their riders so that the stars don't have to traipse around a public hotel in search of a massage.

There's certainly an air of tired Blackpool hotel about the team's latest temporary dwelling. Unless, of course, you're a fan of beige, layers of bed sheets that refuse to untuck from the mattress and woodchip wallpaper. Still, by her own admission, Lueber's schedule for this evening is less taxing than normal.

Massage masterclass

'We tend to massage two riders each night but, since Fabian withdrew earlier in the race, I only have one.' That explains the half-drunk glass of red wine on the kitchen surface (though just the one while washing the staff's clothes – she'll wash the team's kit later that night to fill the space in her easy massaging schedule). Mind you, after training as a physiotherapist nearly 20 years ago, she's an expert at isolating – and then releasing – knots and hotspots from a day's racing.

QUICK Q&A

Lueber's swift tips for coping with the Tour

How should people prepare for a big event next year?
You need to stay fit through the whole year. Yes, it's good to relax and let your hair down in the winter, but don't let yourself go so much that you're playing catch-up throughout 2016.

What's your advice for anyone visiting the Tour?
The atmosphere is amazing so absorb it like a sponge. People from so many different countries create a unique backdrop. Find time to speak to them. It's not hard to break the ice as you've already got something in common.

What's the weirdest thing that's happened to you while working at the Tour?
It didn't happen to me, but it was strange this year when Fabian [Cancellara, who Sabine masseurs for] had to withdraw while in yellow, and then the same thing happened to Tony Martin.







'You don't go in with a set routine – you need to feel the muscles,' she says. 'The aim is to push out the lactic acid and toxins that have built up that day. It also helps to stretch out muscles, which might not just be legs but the back and neck, too. And yes, this massage is a painful experience, but it has to be or there's no point. If you want a relaxing massage, go to the wellness centre.'

Each massage takes an hour, so when Lueber has a full complement of riders, that's two hours of intense massage every day. I suggest giving all her energy to the riders for 23 days of the Tour must be a draining experience. 'At the beginning, 20 minutes would kill me, but not now. In fact, it's easy. If you're full-time in a clinic, you'll be massaging for much longer than this.'

'Massage is painful, but it has to be. If you want a relaxing massage, go to the wellness centre'

That's not the only difference between a physiotherapist down the road and the Tour soigneurs. 'Elite legs are so different to work with than recreational riders,' she says. 'They have hugely trained muscles, which isn't normal. Each rider is also markedly different to massage. Someone like Frank Schleck is totally different to Fabian. Frank has legs like this [her hands close together] and Fabian has legs like this [hands stretch apart, nearly knocking over the wine glass]. But one's a climber and the other is a Classics rider so that's to be expected.'

Lueber is the only soigneur in the team to have a designated rider – Cancellara – so knows his legs better than he does himself. As well as tending to his knotted thighs at races, Lueber is so vital to Cancellara's preparation that she will massage him in his home of Bern, Switzerland, for example if he's preparing for the Classics or the Worlds. Outside of the race season, Leuber's thumbs still don't get a break. 'Before Christmas, Fabian's family and I will head to Gran Canaria for his private training camp, though it's probably the last time this year because of both of our impending retirements. But it's been a privilege. Fabian Cancellara is a huge star but, for me, he's only ever been Fabian.'

James Witts is a freelance journalist who has only ever been James Witts

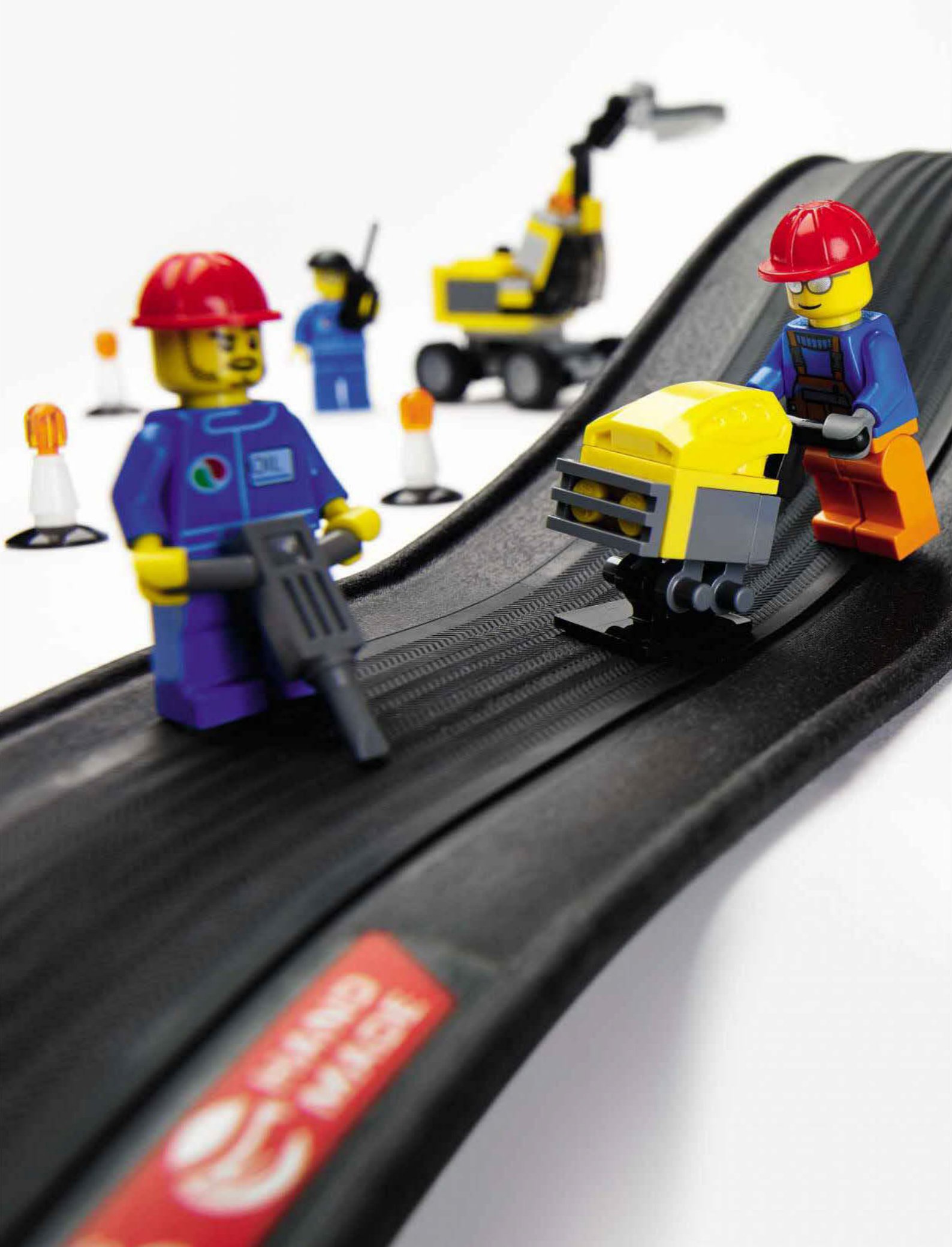


Rider: Matteo Tosatto Tinkoff Saxo

Photo: Pocis

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ROAD IMPROVEMENTS AHEAD

Upgrading your tyres can be the cheapest way to improve your ride, but how do you know which ones to choose? It helps if you understand how they're built and how they work

Words **JONATHAN MANNING** Photography **DANNY BIRD**

It sounds like science fiction, but the introduction of space-age materials to road bike tyres could give them a form of virtual intelligence. When you're riding along a flat, smooth road, the rubber in the tyres will automatically harden to reduce rolling resistance, but when you brake, accelerate or take a corner it will soften to create more grip.

The magic comes in the form of graphene – the wonder substance setting hearts aflutter in the field of material science. Graphene is a one-atom-thick layer of carbon that is incredibly light, strong and flexible. It could lead to folding mobile phones, dramatically lighter aircraft and, er, the thinnest, most impenetrable condoms (the Bill & Melinda Gates Foundation has donated $100,000 for investment into graphene to create a safer contraceptive with better sensation).

It's also set to transform the world of cycling, including the road tyre, and you won't have to wait decades to test its effects. Italian company Vittoria has just launched a version of its popular Corsa tyre with added graphene in the tread compound, and it claims the result is a 19% reduction in rolling resistance compared to its predecessor, as well as greater puncture resistance and big improvements in overall longevity.

Skinny, highly pressurised tyres are being phased out in favour of wider tyres run at lower pressure

While it's too early for *Cyclist* to verify these claims, it's certainly evidence that tyres, despite being among the least glamorous components you'll find on a bike, are at the forefront of scientific development and have a far greater impact on ride quality and performance than they are often given credit for. Good-quality tyres are perhaps the cheapest and easiest upgrade you can make to your bike, so it's worth understanding a bit about what goes into those rubber hoops.

Circle of compromise

Minimising rolling resistance, maximising grip, cushioning the ride, all while fending off the continual threat from glass, flint and thorns – tyres are impressive feats of engineering. Manufacturers have to balance these competing demands when developing new tyres, and it's no easy task, as Benjamin Blaurock, product manager for Continental's road tyres, explains. 'If you increase one of these parameters it will influence at least one of the others,' he says. 'For example, a very hard compound would lower rolling resistance but decrease grip, plus it would feel very wooden to ride. If you want high puncture resistance you can add a thick anti-puncture layer, but that adds weight, and pushes up rolling resistance.'

Such inescapable compromises explain the wide spectrum of road tyres available. At one end are stiff, heavy, durable and highly protected tyres best suited to touring and commuting, where puncture resistance has a higher priority than outright speed and performance. At the other end are super-light, grippy, supple tyres aimed at racers who are prepared to accept an increased risk of a flat tyre and reduced longevity for the additional performance gains that might secure them a win or a new PB come race day.

As Blaurock points out, 'It's important to have a great feeling from your tyres, and they can influence the performance level in a very significant way.' He also reminds us that some people are prepared to shell out upwards of £2,000 on top-end carbon wheels, while the difference in price between a mid-range and a premium-quality tyre is barely £50. Tyres represent a relatively cheap upgrade.

With so little contact with the road surface – less than a thumb print – how can a tyre make such a difference to the ride feel? Unlike mountain bike tyres, where the tread pattern is crucial for grip, road tyres rely more heavily on a combination of the compound of the rubber and the suppleness of the carcass. In the wet, a road tyre will cut through the film of water (and not aquaplane on top of it) and hence even a totally slick tyre can still provide sufficient grip to keep you upright. Even tyre manufacturers admit that having any kind of tread pattern on a road tyre is more for the psychological benefit of the rider than any contribution to grip. What this demonstrates is how important the construction of a road tyre is to every aspect of its performance, so let's peel back the layers.



Roll-up, roll-up

Tyres are typically an assembly of four elements. The quality of the materials used for each of these is

THE THICK AND THIN OF IT

Why 23mm tyres are losing out to 25mm

In addition to its construction and the quality of the materials used, how a tyre feels and performs also depends hugely on the combination of its size and the air pressure within it.

The laws of physics dictate that if two tyres are inflated to precisely the same pressure and the same load is placed on them, they will have the same size contact patch, albeit of different shapes. A narrow tyre will have a thinner, longer contact area, while the wider tyre flattens across its width for a shorter more circular contact patch. This means there is more tyre and tube flex in the narrower tyre, resulting in more energy being lost to friction, and higher rolling resistance. The counter argument says that wider tyres will be heavier and therefore slower to accelerate because the rotating mass of the wheels is greater. But the fact that professional teams are switching from 23 to 25mm tyres, and even 28mm on the spring cobble Classics, suggests that performance advantages outstrip the weight penalty.

important, but it's how they interact that really determines performance. Working from the outer layer inwards, first comes the tread or rubber compound that contacts the road. Next is usually some kind of puncture protection layer and finally comes the carcass that gives a tyre its structure. The fourth element is the inner tube, which is either fully enclosed within the carcass, as with tubular tyres, or fitted as a separate component, as per clinchers.

Tubeless tyres, described by German tyre manufacturer Schwalbe as 'the technology of the future', do away with the need for an inner tube and therefore reduce rolling resistance by taking away the frictional losses created between the tube and tyre as the tyre rolls and flexes. Schwalbe claims its Pro One tubeless tyre has 25% less rolling resistance than a comparable clincher tyre with an inner tube, which highlights the influence the inner tube alone has in the tyre system (see p39 for more info).

For race day, pros across disciplines including track, time-trial, road and cyclocross use tubular tyres, where the tread, casing and tube are sewn into a single structure. Despite the nuisance factor of having to glue these tyres to wheel rims (they don't engage via a hooked bead as per clinchers), the pros favour the tubulars' smoother ride, proven lower rolling resistance and the reassurance that even with a flat, the tyre stays on the rim.

'The physics of that perfectly round cross section shape gently hugging a (usually) latex inner tube is optimal for a soft, supple system because it will deform perfectly in every direction,' says Morgan Nicol, chief technical officer of Challenge Tyres, a company specialising in handmade tubulars. A typical clincher tyre is constructed with a pronounced U-shape and will not deform as uniformly.

Why does this matter? To lower rolling resistance a tyre needs to be supple enough to deform and absorb any imperfections in the road surface, allowing the momentum of rider and bike to continue unimpeded.

The alternative, says Nicol, is that each time a tyre hits a stone or uneven surface it bounces back by a tiny fraction



(which is happening many times per wheel revolution), resisting forward motion. If you scutinised even a super-smooth road surface under magnification, its profile is far from flat. On a microscopic level, tyres experience something akin to bouncing over the cobbles of Paris-Roubaix every single ride, losing energy as the wheel is repeatedly airborne. This is why skinny, highly pressurised tyres are gradually being phased out in favour of wider tyres run at lower pressure, as it has been proved the wider, lower-pressure tyres create less rolling resistance because they deform more readily and thus bounce back less.

Eric Gertner, Bontrager's chief tyre engineer, says, 'Everyone used to ride 19mm-wide tyres pumped to 120psi thinking it was faster. But we now know that's not the case. From what we have seen in testing, a higher-pressure tyre will bounce you around more and that bouncing around is actually energy being bled off into the universe. On a polished velodrome a 19mm tyre might be the fastest, but on a road the optimum is definitely bigger to take that road noise out, and a lower pressure, within reason, is a good move for a lot of people.'

Suppleness, it seems, is a tyre's greatest asset, and even more so when cornering, especially in the wet or on rough surfaces. Nicol says, 'As you come into corners where the road surface is not perfect, any bouncing over bumps will tend to unweight the tyre.' If water is added to the situation it acts as a lubricant, and you're likely to slide onto your backside unless the suppleness of your tyre can retain contact with the road.

'Suppleness depends partly on the thickness and flexibility of the tread, but really it's the casing that plays the dominant role in a tyre's performance,' says Nicol. This casing consists of layers of woven and bonded threads.

VINEGAR TRICK

High-end tyres can puncture easily, but there might be a strange solution

While most mass-produced tyres have a tread made from a vulcanised rubber compound, some top-end hand-made tyres are manufactured purely from natural rubber. This deforms more easily and is stickier, giving more grip for cornering, but there is a downside. The sticky nature of the natural rubber means it can pick up and hold onto grit. These tiny, sharp intruders gradually work their way through the casing to cause a puncture. But there is a bizarre solution.

Challenge Tyres' chief technical officer, Morgan Nicol, says, 'It seems unlikely but rubbing tyres with vinegar helps, because the vinegar dries the sticky oils from the natural rubber in the tread.'

Try it the next time you stop at the chippie.

The higher the number of threads per inch (TPI), the thinner each thread is and the more supple the tyre will be. Race quality tyres can have up to 320TPI, while winter training tyres might have just 60TPI. But be careful when selecting tyres, because manufacturers will often quote TPI rates based on multiple layers of carcass. For example, a 180TPI carcass might be three layers of 60TPI.

Materials matter here too, with top-of-the-range silk (used for track tubulars) being softer and more supple than cotton threads, which in turn outperform nylon. But as Continental's Blaurock pointed out at the beginning, you can't have it all. High thread count, cotton carcasses and softer durometer rubber treads may be the most supple but they lack the durability and resistance to cuts of more rigid nylon and harder rubber compounds.

As yet, nothing has been able to defy these compromises and produce the perfect blend of suppleness and durability. But who knows what might be coming down the road once the graphene revolution takes hold? ●

Jonathan Manning is a freelance writer who after spending a month investigating tyres has developed a rubber fetish



'Suppleness depends partly on the tread, but it's the casing that plays the dominant role in performance'



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Taking in two legendary climbs, this sportive is proof that age is no barrier to cycling success

Words **SUSANNAH OSBORNE** Photography **JOJO HARPER**



I don't tend to hang out with the over-70s, except at weddings, anniversaries and funerals. It's not that I'm ageist, but the 30-year age gap means that our tastes in music rarely match and most of them aren't on social media.

But as I line up at the start of the Granfondo Les Deux Alpes, a two-day sportive based around the French ski resort of the same name, I'm surrounded by pensioners. It's as if the event has been sponsored by Saga and it makes for a surprisingly calm atmosphere that is the antithesis of the usual carbon-and-testosterone sportive scene.

Many cyclists might think that standing shoulder-to-shoulder with a bunch of septuagenarians is their chance to shine. Leaving the old dudes for dead (not literally, hopefully) is a chance to climb onto the podium. But others, including many of the younger local riders on the start line, see it as a chance to learn a thing or two from cyclists who have been riding bikes since before they could walk and who still see derailleurs as a fancy bit of kit.

One issue among these older participants, though, is that some have trouble getting going. Next to me a shrunken, white-haired gentleman is swaying to and fro as if he's on the deck of boat. After a few minutes spent lurching towards his bike he declares in French, 'Just get my leg over and I'll be fine.' Five local men dutifully lift him onto his bike and all is well.

Experience counts

In 1998 Marco Pantani won Stage 15 of the Tour de France in a summit finish in Les Deux Alpes. In atrocious conditions the Italian rode away from Jan Ullrich on the Col du Galibier, some 45km from the end of the stage. By the time he

The details

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crossed the line he had a nine-minute lead on his German rival for the yellow jersey .

As a tribute, the town created an event to celebrate that day – the Marco Pantani sportive (not to be confused with the Pantani sportive in Italy that featured in the last issue of *Cyclist*). When the Italian fell from grace, the authorities quietly changed the name to Granfondo Les Deux Alpes. It's not big, it's not brash but the event has a loyal following of riders, many of whom have been coming since its inception.

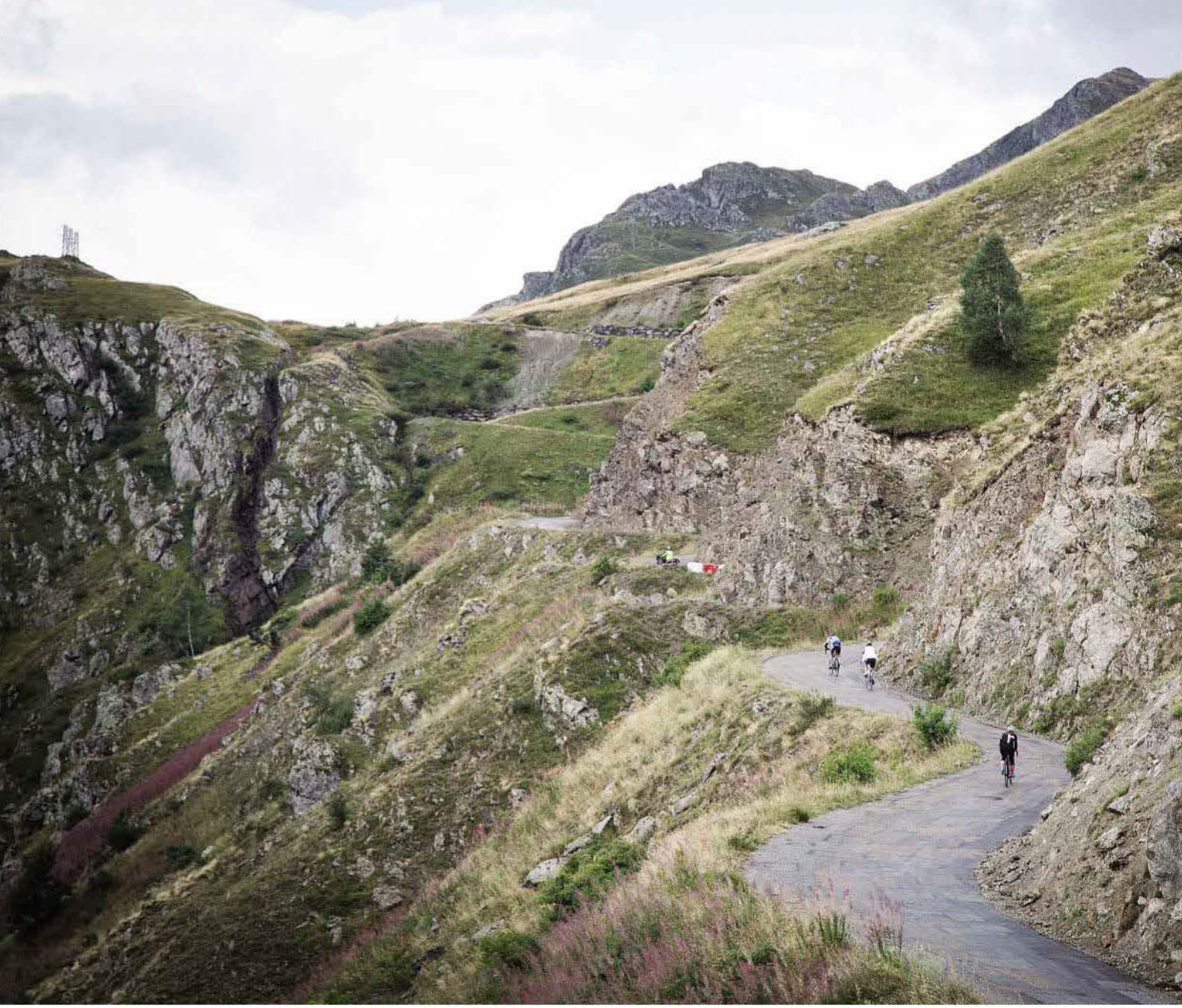
As if in tribute to Pantani's victory in 1998, the weather today is miserable. A heavy mist envelops the mountains, and rivers of rain are running along the mile-long high street. Even the cows have wandered down the mountain to find shelter in the pastures closest to the town and the sound of clanging bells echoes through the valley. Yesterday we were riding in bibshorts and summer jerseys, but today I'm togged up in armwarmers, kneewarmers and a jacket.

As if in tribute to Pantani's victory in 1998, the weather is miserable. Even the cows have wandered down the mountain to find shelter

Only around 100 riders are gathered at the start. Yesterday there was a 9km time-trial up the 10 bends to Les Deux Alpes. A proper start ramp and officious timekeepers were transported from the village so we could see

Above: Even on an average day the Alps can't fail when it comes to stunning scenery

Previous pages: Riders cross the Barrage du Chambon at the foot of the Deux Alpes climb



One rider careers off into the gutter and throws himself off his bike

exactly how we fared against Pantani's record of 21 minutes. My time wasn't going to break any records but I'm pretty sure that his hematocrit levels were higher than mine for the climb.

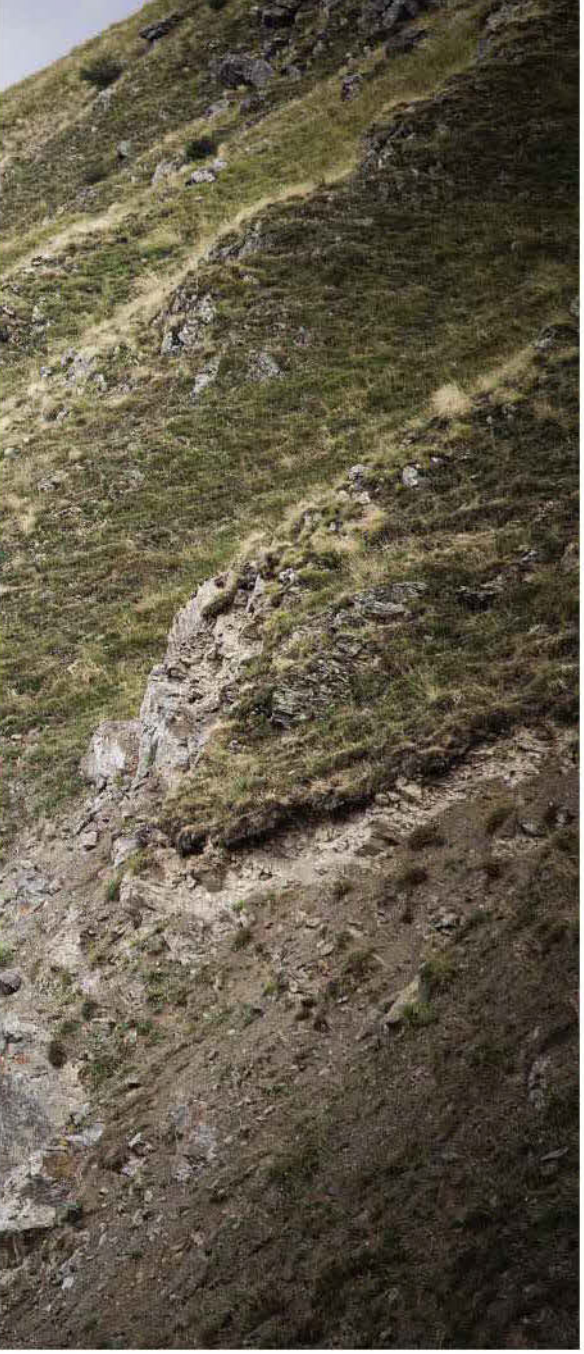
Today there are two options on offer: a 166km loop (with 4,000m of climbing) heading north-west and taking in the Col d'Ornon, Col de Parquetout and Alpe du Grand Serre; or a 66km loop (2,400m) towards Alpe d'Huez and back.

The neutralised roll out to the start proper is a fraught affair. Riders flash past me making questionable decisions about how fast they should ride. Water is flying everywhere and the clouds are so low that it's almost dark. One rider careers off into the gutter and throws himself off his bike. I can only assume he was unable to brake in the wet and considered it tactically safer to hurl himself onto a verge of grass than to risk toppling over the barriers on a hairpin bend.

The sportive begins for real at Barrage du Chambon at the foot of the Deux Alpes climb, where a decision on which route to take has to be made. On the emphatic advice of Giles, head of tourism in the town, who is concerned about the weather, I opt for the shorter route. It is, he says, a beautiful ride on roads that are '*très belles*'.

My group of 50 or so riders heads right onto the D1091, the road that connects Bourg-d'Oisans and the Lautaret pass. It's a quick route into Italy and features in La Marmotte sportive, but a massive landslide in April has made the road impassable. Some reports say that 100,000 tonnes of loose rock above the damaged tunnel is moving at 25cm per day towards the road. Residents trapped in the villages behind the landslide had been taking a boat across Lac du Chambon to get to work but the fear of the huge waves that would result if the mountain collapsed into the lake have now put a stop to that, which makes for a long round trip.

Thankfully we turn off this road and start to climb, which substantially reduces the risk of



Left: The Col de Sarenne is the lesser known back route up Alpe d'Huez. It's this narrow and exposed descent that riders complained about in the 2013 Tour de France



The rider's ride

Specialized Amira S-Works £6,500, specialized.com

The bike pictured here is the same bike (save for a few decals) that Lizzie Armitstead rode to victory in this year's World Road Race Championships. A punchy, race-ready bike, there are few women-specific bikes that can rival the Amira S-Works for speed and performance. Equipped with full Shimano Dura-Ace 9000 groupset and Roval Rapide CLX 40 carbon wheelset, it's a true weight weenie – a *Cyclist* weigh-in put it at 6.9kg with pedals. It's also incredibly stiff, which helped on the steep climbs I encountered on the route. I especially liked the Specialized S-Works Turbo 24c tyres, which proved to be fast and grippy in the wet.



being swallowed up in a landslide. Five minutes in we hit a series of four steep ramps that lead to the pretty village of Mizoën. As the gradient hits 10%, riders of all ages fly past me. Most are French and proudly wearing the colours of their local club. The only English guys I've seen so far were wearing short-sleeved jerseys and had the look of men in the preliminary stages of hypothermia. And they went the long way...

Alpe d'Huez's back alley

The road steers us north and we start making our way towards the Col de Sarenne, the lesser-known back face of Alpe d'Huez, which has a fierce reputation among professional riders. The Sarenne bowl is harsh, beautiful and isolated, which means that there are few cars to worry about. *Cyclist* columnist Felix Lowe, in his book *Climbs And Punishment*, describes how in the 2013 Tour Tony Martin told reporters, 'It's irresponsible to send us there,' citing the lack of guardrails and 30m drops on the corners.

The bleak landscape looks more like the Peak District in winter than the lush, summer Alpine landscape I'd expected, and the combination of dark rock and low light makes it feel like dusk. A pair of riders passes me but I'm feeling fresh and I pull them back. We ride together in silence, the rhythm of our pedal stokes in harmony, and despite the lack of chat I'm glad of the company. The 12.9km climb averages 7%, with the tightly packed ramps close to the summit topping out at over 15%. I'm out of the saddle but then have to stop abruptly as a marshal appears on the road waving his arms and shouting, '*Mouflons! Mouflons!*' A herd of goats is occupying a large section of road and despite his best attempts to shoo them out of our path by swearing at them in French they are blithely ignoring him.

The drizzle has set in and as I stop to put on my rain jacket I notice a party of slugs gathering near my back wheel. I wonder how fast they can crawl (I later find out they have a max speed of 0.047kmh) and am satisfied that despite my pedestrian pace at least I'm ahead of the slugs.

At 1,999m the summit of the Sarenne is the highest point on the ride. It's followed by a 3km section of road leading to the heart of Alpe d'Huez. It's a hazardous, gravel-ridden trail that's peppered with potholes and decorated with dung. Sheep and goats of every size and colour stubbornly stand their ground, forcing us to slalom around them like Franz Klammer. An unused chairlift sways in the wind and is a sign that we're approaching the resort.

Down d'Huez

Descending the hairpins of Alpe d'Huez is hugely satisfying. The effort of the Col de Sarenne hasn't taken too much toll and besides,

descending is why I come to the Alps. The mizzle has kept the tourists at bay and it's a smooth, fast ride through Dutch Corner to hairpin number 16 in the village of La Garde, where we take a sharp left. As we round the corner, a man in a tent shouts, '*Bananes, bananes!*' I fly past and it takes me a minute to work out that the tent was a feed station, but it's too late now and we start to climb again.

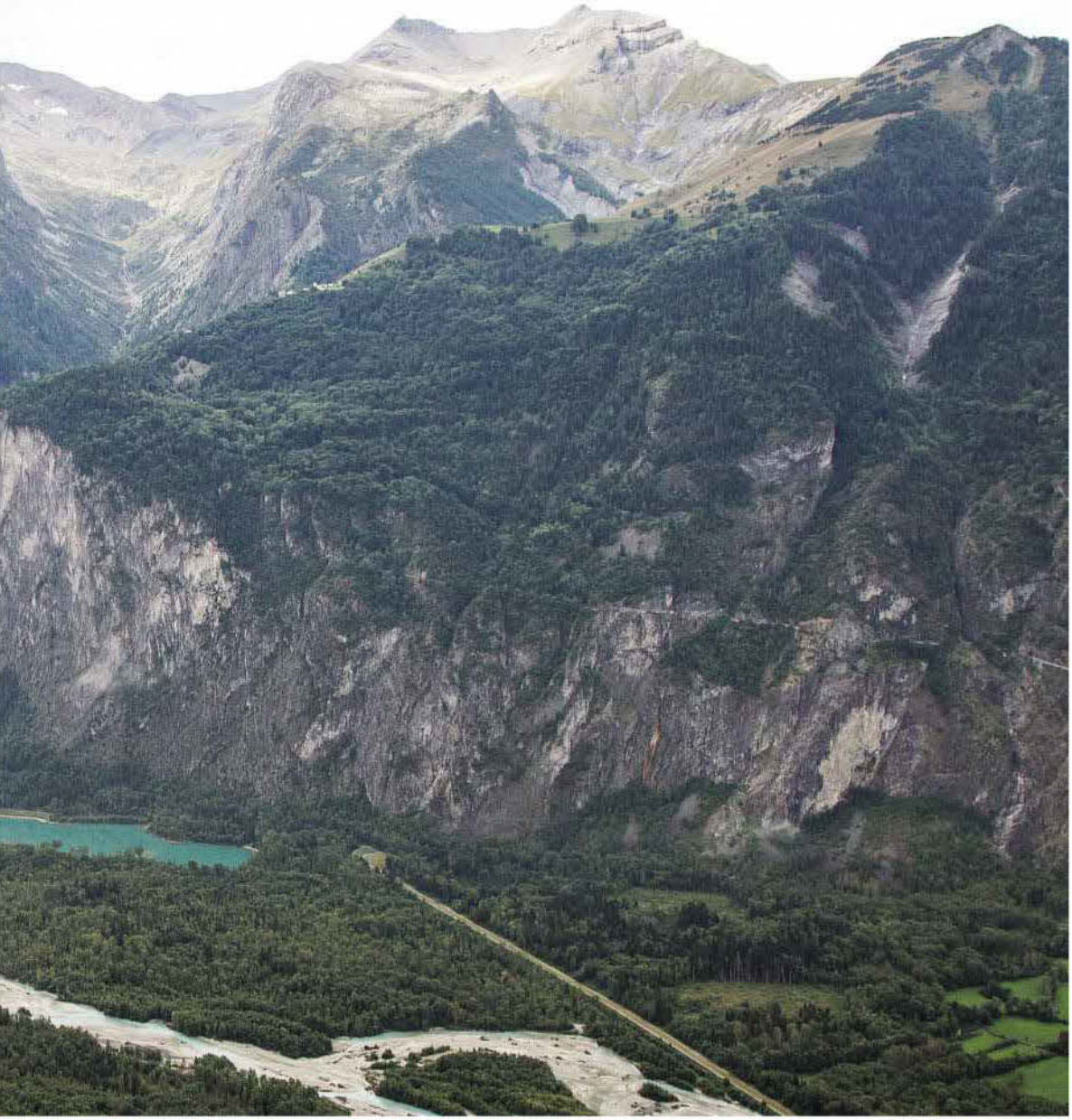
I'm treating this as a ride to be savoured rather than raced and it's refreshing to take the time to look around rather than fixate on the numbers on my stem. The road we're on winds up above the Gorge de l'Infernet. It's only a car-width wide, and there's nothing but a 50cm-high concrete curb between me and the sheer drop to my right. Down below the Romanche river is glistening turquoise, thick with snowmelt. The water looks invitingly like the Aegean sea, but my new riding partner (who is definitely over 60) says, 'Don't look down!' and then laughs like Muttley in *Wacky Races*.

Our group swells to four and we tap away together, them speaking pidgin English and me speaking the kind of French that belongs in an episode of *Allo, Allo!*. It's nice to have company and I still can't get over how impressive these old guys are, especially when our descent to Le Freney d'Oisans starts to feel like a race. Eventually we reach the D1091 again, and

My new riding partner says, 'Don't look down!' and then laughs like Muttley







The Romanche river glistens with snowmelt. Even in summer *Cyclist* would advise against taking a quick dip

there's only a repeat of yesterday's time-trial up to Les Deux Alpes between me and the finish line.

The final climb lacks the stark beauty of the route we've been riding up to now – the wide road is flanked by high grassy banks – so it's a case of getting it done rather than savouring the mountain views. After a 40-minute, 9km climb I'm finally home and the sun is out.

As I cross the line I'm told the presentation will be at 5pm in the vast sports hall in town. Miraculously I win a prize (third woman overall). My excitement is tempered, however, by the realisation that there seem to be prizes for most of the riders, and an hour later we're still there. After the overall winners, the age groupers, men and women collect their trophies, the 50-55s, the 55-60s... the prizes just keep on flowing until we're celebrating the 80-85 age group.

At this point a man rides through the doors and into the sports hall, where he slowly dismounts from his bike and raises his two arms in the air above his head and shouts, 'Yeah!' At this very moment his name is called and he stumbles towards the podium where three officials help him onto the top step. The crowd whoops and cheers as he collect his prize – first in the 80-85 age group – but as the applause fades, rather than get down, he starts to shuffle around on the top step. The officials realise that he can't step down and three men rush to help. Safely back on the ground he collects his pasta meal and tucks in before getting on his bike (with help) and riding home.

Susannah Osborne does not yet qualify for the 80-85 age group, but she's working towards that goal

How we did it

TRAVEL

Cyclist flew with Easyjet from London Gatwick to Lyon, with fares starting at £23 each way, plus £70 return for a bike bag. From there we took a private transfer to Les Deux Alpes. The cheapest way to travel is to take a bus (faurevercors.fr) from Lyon airport. A return ticket costs from €58 (£43).

ACCOMMODATION

We stayed in Le Cortina, a stylish apartment block towards the end of the town. The block has a secure bike shed, but you are also welcome to keep the bikes in the apartment. Book through Peak Retreats (peakretreats.co.uk).

WHERE TO EAT AND WHAT TO DO

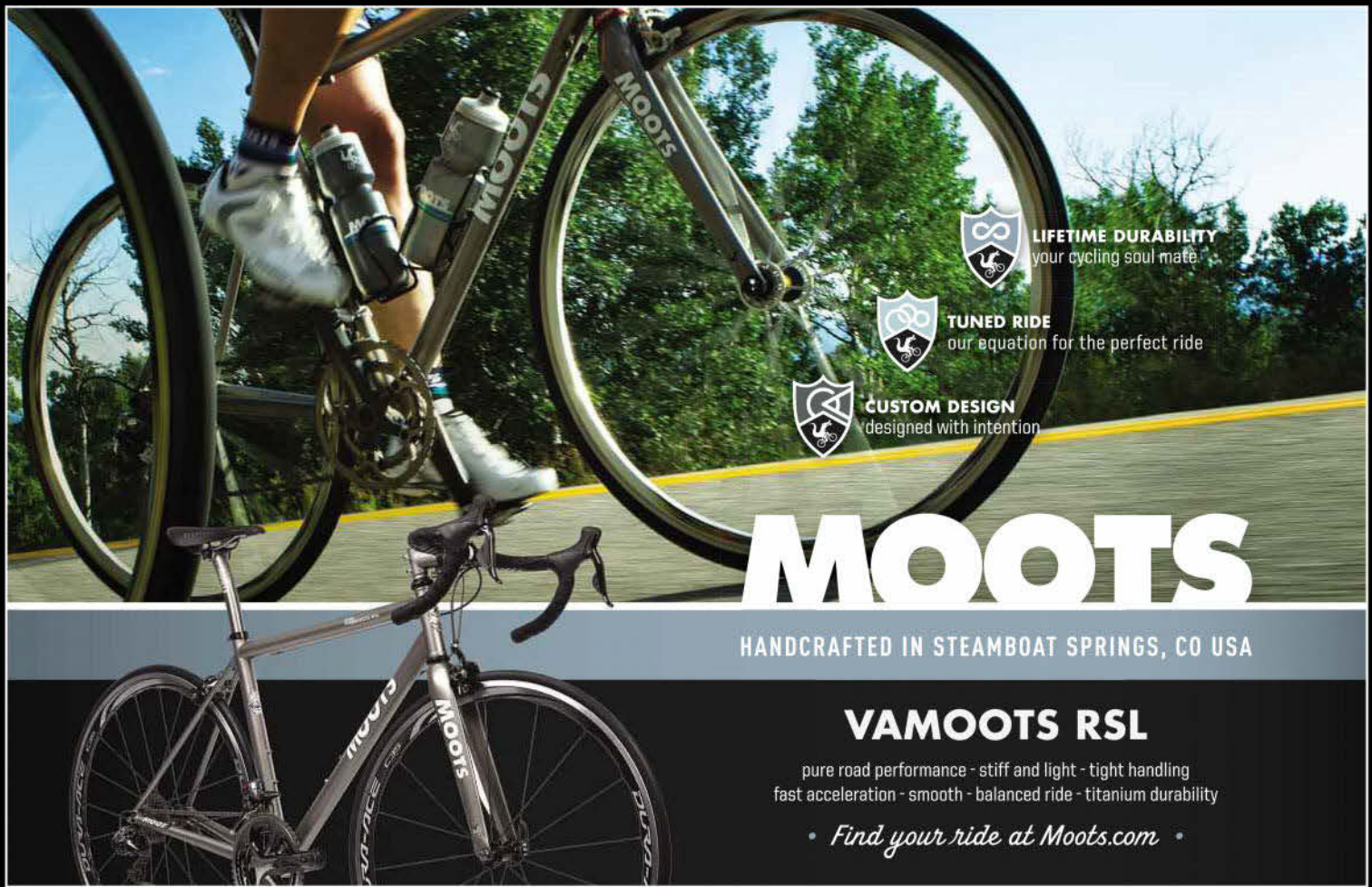
The funky, kitsch Grain de Sel does great pizzas alongside supersize prawns, salads and steak (1 Rue Saint Claude, +33 4 76 80 50 30). Another ride that's certainly worth doing is to take the Télécabine de Venosc cable car (with your bike) to Venosc village in the Écrins national park. From there it's a stunning 9km ride to St Christophe en Oisans and another 9km to Bérarde at the head of the valley. Alternatively ride to Bourg-d'Oisans from Les Deux Alpes and up the Vallée du Vénéon picking up the route at Venosc.

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Bikes

Three bikes, two materials, one tough choice



This issue we present three bikes and a 50/50 split between carbon and titanium. How have we managed that? Well, if you can't decide between the hand-crafted titanium Lynskey, with its unique twisted tubes, or the svelte carbon Merida, which is among the lightest bikes ever created, perhaps you should consider the Festka Doppler, which combines both titanium and carbon to rather wonderful effect. Take your pick.

STUDIO PHOTOGRAPHY **HENRY CARTER** RIDER PHOTOS **MIKE MASSARO, ROB MILTON**


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Lynskey R460 Disc


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Merida Scultura 9000


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Festka Doppler

Lynskey R460 Disc

One of the oldest hands in the titanium game presents a modern take on a titanium frame



Words **JAMES SPENDER**



THE SPEC

Model
Lynskey R460 Disc

Groupset
Sram Red 22 HRD

Deviations None

Wheels
Stan's No Tubes ZTR Holy Grail tubeless

Finishing kit
FSA Energy alloy bars, Ritchey WCS C260 stem, Lynskey Titanium Setback seatpost, Selle Italia Elite Kit Carbonio saddle

Weight
8.47kg (size 55cm)

Price
£3,349 (frame and fork), approx £5,165 as tested

Contact hotlines-uk.com

If there were a Nobel Prize for services to titanium framebuilding it would have gone to Lynskey some time ago. But then the most deserving don't always win. CS Lewis once nominated his friend JRR Tolkien for the literature prize, only for Tolkien to be rejected by the Nobel committee because his work had not 'in any way measured up to storytelling of the highest quality'. Lynskey's credentials, by contrast, are beyond dispute. With a bicycle heritage dating back to 1986, these Tennessee builders' frames exemplify titanium at the highest level, and the R460 Disc is no exception.

Hidden qualities

The first thing you'll notice about this particular R460 Disc is the lack of titanium on show. Where most ti frames usually have the naked metal proudly on display, Lynskey has chosen to cover up most of the R460's tubes with some rather serious paint, inspired by the early 1990s Klein bikes.

For some titanium fans that might seem sacrilegious, but as a number of stainless steel bikes have shown, painting expensive metals can enhance the beauty of a frame – such as the Condor Super Acciaio or the custom Swallow featured in last month's *Cyclist*. For Lynskey, this approach is something the company is trialling this year. As well as the bike pictured, bare metal, satin finish or mirror polished R460s are also available. The paint, at this stage, is essentially custom, with prices starting at £700 on top of a frameset.

As with an aluminium frame, or steel for that matter, the titanium used in a bike frame is actually an alloy. For the tubes used on this bike the alloys are 6Al/4V and 3Al/2.5V titanium, meaning titanium plus 6% aluminium and 4% vanadium, or 3% aluminium and 2.5% vanadium. The addition of these elements means the resulting titanium alloy can be heat treated or cold-worked to produce a stronger finished material. This increased flexibility in terms of working the



WELDING

A titanium frame wouldn't be a titanium frame without a fuss being made about the welds, so here goes: Lynskey has excelled itself. Where many companies will either weld titanium using robots or in two passes – one for strength, the other for aesthetics – Lynskey welds joints by hand in one uniform pass. It's harder to do it this way, but the results speak for themselves.

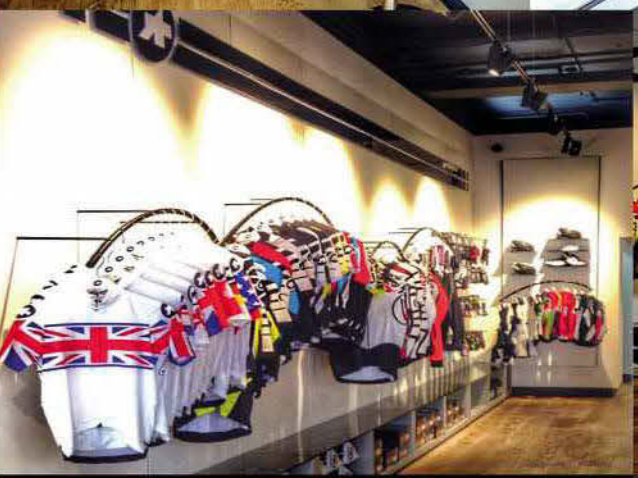
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I felt connected to the bike, and hence the road, as the R460 transmitted buckets of feedback

metal means that in many ways the strength properties and performance of titanium frames are as 'tuneable' as carbon fibre frames.

'We get real specific about which tubes are used for what,' says Lynskey's plant manager, Steve Kirby. 'Areas like the head tube will be cold-worked stress relieved, whereas chainstays and seatstays might be fully annealed [heat treated], to adjust the ride characteristics.'

I've wondered previously why most titanium manufacturers don't tend to use 6Al/4V for anything other than the occasional head tube or dropout, when on paper it's stiffer and lighter than 3Al/2.5V, but as Kirby explains it's because 6Al/4V doesn't readily lend itself to being made into the tubes suitable for bikes.

'You start with a titanium ingot – like a big tube with a hole in the middle – and it's stretched by firing it through something like a cannon. I saw one mess up once and blast the ingot through the wall and out into the parking lot, where it smashed through a car roof. Since 6Al/4V is that much harder, it doesn't readily lend itself to being stretched into fraction-of-a-millimetre thick tubes, so despite it being stiffer than 3Al/2.5V for the same wall thickness, not a lot of people build bikes out it.'





DROPOUTS
Above: As the market is yet to settle on a disc-axle standard, Lynskey has equipped the R460 Disc with chameleonic dropout abilities. Thanks to interchangeable inserts, the R460 Disc can support both thru-axle and quick release hubs. Up front Lynskey will soon be releasing a thru-axle fork option too.

The solution where the R460 is concerned is to take 6Al/4V sheets and roll, shape then seam-weld them into the triangulated tubes for the frame's main triangle. The round seat tube, seatstays, chainstays and head tube are therefore 3Al/2.5V. Well they're 'rounded', save for the seatstays which get Lynskey's trademark 'helix' profiling, which looks rather like a twisted, spiralised tube, which it's claimed increases rear end stiffness.

Not having ridden a comparable non-helixed frame I can't attest to *extra* stiffness, but I can definitely say this is one stiff titanium bike.

The bottom line

There's no getting away from the fact that the R460 is a race bike, and as such it doesn't make many apologies to that most sensitive of fellows, Monsieur Posterior. The head tube on this 55cm effective top tube bike is a hair over 13cm, making for a large saddle-to-bar drop. Great news for pliant racers, but if you're not comfortable in a racing tuck and harbour reservations about stacks of spacers spoiling a bike's aesthetic, you might want to look away now – the R460 isn't the bike for you. But if you like your bikes sharp, responsive and aggressive, you might just have found your perfect match.

For a titanium bike – a material associated with a plush ride quality – the R460 is remarkably stiff. Wide-profile tubes help, but I'd put money on the compact geometry being the main cause. The frame feels small



DESIGN
Each Lynskey is designed by David Lynskey, who designed and built the first Lynskey back in the early 1980s under the name Litespeed. The twisted 'helix' shapes of the seatstays isn't just a subtle aesthetic – Lynskey reckons it boosts stiffness too.



beneath you and is supremely manoeuvrable. It's hard to explain, but it's akin to throwing a cricket ball versus a football. They might weigh roughly the same, but the cricket ball throwing sensation is a hard, direct one, the football softer and somewhat ungainly. The R460 is the cricket ball: punchy and alert.

Pedal stomping is a rewarding experience, but it's the cornering that won me over. The back end is clever, with interchangeable dropouts to accommodate quick-release wheels or bolt-thru axles. This test bike came set up with a bolt-thru dropout but with extras to convert it to quick release so I was afforded a like-for-like comparison, and the bolt-thru definitely won the day.

Cornering isn't just about leaning a bike through a bend. Braking performance is paramount, as is a stiff pedalling platform for accelerating out of the turn. The bolt-thru set-up made a noticeable difference to both. It gave the Sram Red disc brakes a rock-solid brace that translated to powerful, progressive braking, and tied the back of the bike together in a tight, snappy triangle that was stiff enough to want to lift up the rear wheel when pedalling hard.

All that added up to a bike whose 8.5kg belied a fleet-of-foot ride that would be the envy of many lighter carbon steeds, and certainly trounces any other titanium bike I've ever ridden.

Hard and fast rules

Once you've subscribed to the racy geometry, what's the catch? Well, it's twofold. First, the weight when it comes to climbing. Those extra kilos above 'race weight' are offset to a degree by the stiff, efficient punch the compact frame delivers, meaning short, sharp hills are no problem. But on longer climbs the extra mass makes itself known. Then there's the comfort side of things.

Rougher surfaces felt a bit rumbly. The set-back titanium seatpost does a good job of compensating for the overall stiffness, but it still wasn't enough to award the R460 all-round comfortable status. The flipside, though, was that I felt entirely connected to the bike, and hence the road, as the R460 transmitted buckets of feedback.

The crux is that the R460 is a race bike. It's not brutal – I had many happy 100km-plus rides aboard it – but it's far from a leisurely pedal. Yet because of that it's an incredibly exciting bike to ride. It's *fun*. It has that carbon race-bike thrill, with a touch of titanium soul. It does make you work up the climbs, but it will rip through the descents, and for all the bits in between it will go like the clappers. Plus, with disc brakes, it will stop on a sixpence. But for me, best of all, it's just a little bit different.

The detail



The R460's carbon fork is a closed-mould fork of Lynskey's own design. It does an excellent job of keeping things sharp at the front end and is neat too, with elegant routing and mounting for the disc brakes. Those disc brakes are Sram's latest-generation Red 22 HRD, which offered the R460 incredible stopping power but without being grabby or poorly modulated. That is, the top-end power is there, but it's a smooth transition to get to that point, with no shuddering or abrupt locking up. Sram has also ironed out issues with lever 'free-stroke' on the early Red discs, where the lever would travel a fraction before engaging the piston and hence the brake. This only adds to the overall lever feel of tactility, predictability and most importantly, trustworthiness.

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Merida Scultura 9000

Like a size-zero catwalk model, it is possible to lose too much weight



Words JORDAN GIBBONS



THE SPEC

Model
Merida Scultura 9000

Groupset
Sram Red 22

Deviations
Shimano Dura-Ace 9000 direct-mount rear brake

Wheels
DT Swiss Mon Chasseral

Finishing kit
FSA K-Force Compact OS handlebars, FSA OS99 stem, Merida EGM-Light seatpost, Selle Italia SLR Kit Carbonio saddle

Weight
5.8kg (52cm)

Price
£7,500

Contact
merida-bikes.com

Scultura is Italian for statue, which is perhaps an odd name for a new bike considering most statues are heavy and immobile. While the heaviest statue in the world is the Statue of Liberty at 204,116kg, the new Merida Scultura Ltd weighs just 4.56kg. *Cyclist*'s test version is the slightly more reasonably specced Scultura 9000, which is only a touch heavier at 5.8kg. In fact, so light is the frame that it gave pro team Lampre-Merida a slight problem. 'No matter what kind of wheels, power-measurement system, GPS antenna we used – the bikes all stayed below the 6.8kg UCI limit,' says Merida director Chris Carter.

The Scultura frame has been around since 2006, although it's been refreshed twice already in that time. It weighed only 1,100g when it launched so it's never exactly been a porker, but the new frame is an astonishing 680g (claimed) – 10g lighter than the previous production record holder, the Trek Émonda. Merida says this was achieved by smart design and lots of trimming rather than by any giant technological leaps or gimmicks. 'The construction uses more than 400 individual carbon parts, carefully placed over a plastic core. Potential resin accumulation is prevented and internal wrinkles are reduced,' says Carter.

Twist and shout

Merida claims that the tube walls of the Scultura are as thin as 0.7mm in places, and it even opted for an external seat clamp over an integrated one because it's lighter. External cables would have been lighter too, but Merida chose to make them internal to improve the aerodynamics. The drive for aerodynamics can also be seen in the shape of the tubes.

'Improving aerodynamics results in more teardrop profiles, but that requires more material that increases weight,' says Carter. 'The tubing profiles are a noticeably more aero shape, using the NACA fastback shape of the Reacto but with greater truncation.'



INTERNAL CABLES

Merida opted for internal cables not just for their aerodynamic efficiency, but also for their looks. Merida director Chris Carter says the Scultura 'is meant to be an object of beauty' and that going back to external cable routing would have felt wrong. The clever stops in the frame also allow it to be easily switched between mechanical and electronic groupsets.

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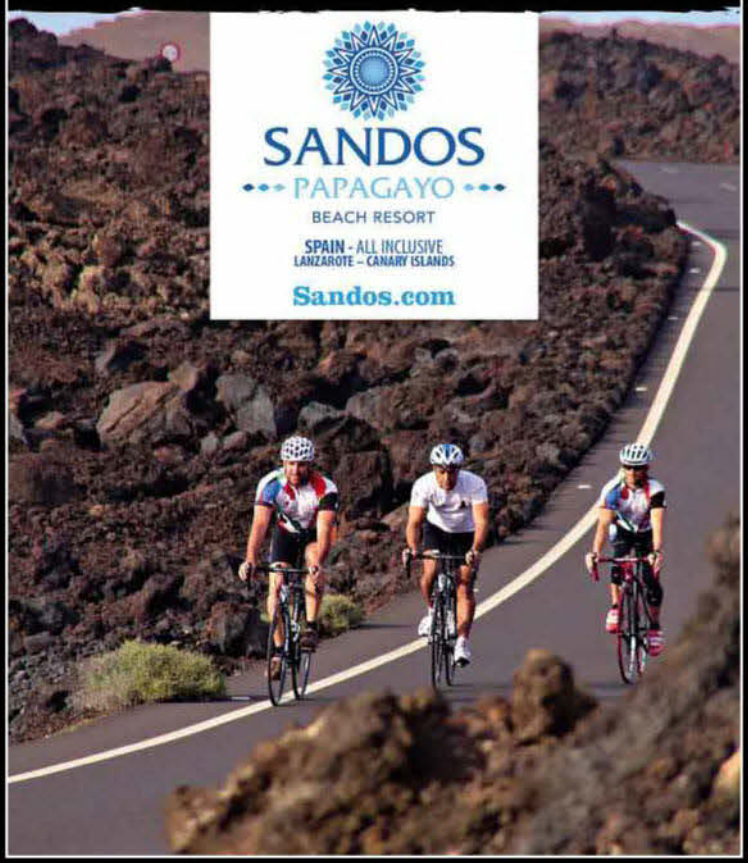


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AERODYNAMICS
Merida started with the shapes from its Reacto and Warp TT bike and adapted them into a lightweight frame. The smooth tube junctions around the seat tube cluster, as well as the truncated shape of the down tube, are the results of extensive wind-tunnel and CFD analysis.

Really pushing on the pedals doesn't elicit the sort of acceleration that you would expect of such a light bike

It's no surprise that the Scultura 9000 has an advantage over its rivals when it comes to climbing and accelerating. Losing a couple of kilos is like gaining free speed uphill, and on long steady climbs your riding partners quickly become distant memories. Short, punchy climbs aren't quite the same story, however.

The area where I ride regularly is generally quite flat with the odd 10% hill thrown in. Most of these are short climbs, so I tend to leave it in a big gear and muscle my way over the top, but the Merida doesn't like that approach. Really pushing on the pedals doesn't elicit the sort of acceleration that you would expect of such a light bike. The speed comes sure enough, but not quickly. Some of that energy drains away as the slender frame struggles to remain solid under the stress of punchy pedalling efforts.

Merida says its Reacto model remains 15% stiffer in the bottom bracket area than the Scultura, and pro rider Diego Ulissi has chosen to stick with the Reacto, even on summit finishes. It seems that for aggressive and attacking racing, where every watt counts, the Reacto may be a more appropriate choice.

What about those of us who prefer to take things a bit easier? Much as I enjoy the occasional foray into the red, mostly I like to cruise the lanes for a few hours and just enjoy the birds in the trees. For my second ride on the Merida I took in some of the quietest roads I know, and in the silence of a steep hill I was able to hear the faint twittering of blackbirds, finches and rubbing brake pads.

There's been a fair bit of criticism levelled at bottom bracket-mounted brakes on these pages and I'm afraid I have to add the Scultura to the list. The rub isn't huge but it's enough to require you to slacken the brakes off when pushing hard on the hills. Also, due to the Shimano Dura-Ace unit not having a quick-release, a large in-line one has to be used (pilfered from one of Shimano's commuter groupsets) that looks hugely out of place on a £7,500 bike that makes a fuss out of attention to detail.

Merida defends the choice of a direct-mount brake as the relocation allows the removal of the seatstay bridge and increased flexibility in the seatstays. As it happens, I think I'd almost forgive them the brake rub because it seems to have worked.

For such a light, aggressive bike, the ride was surprisingly comfortable. It didn't turn the roads into soft pillows, but I could still walk at the end of a 130km ride. Carter says that while 'the main aims were to reduce weight and improve aerodynamics, Merida always has its mind on comfort and stiffness. Comfort was improved 20% versus the previous model.'

That's also why the Scultura has a conventional 27.2mm seatpost rather than an integrated seatmast. Merida was unhappy with the options available so developed its own seatpost specifically to improve comfort. The new frame also has increased tyre clearance, allowing 25mm tyres to be fitted, which may well account for a good portion of the comfort.





BOTTOM BRACKET
Merida opted for a BB386 bottom bracket on the Scultura with a pressed-in bearing seat. The extra-wide bottom bracket construction is designed to ensure minimum torsional flex, although many crank types need adapters to work as very few support it natively.



I found myself attacking corners faster and faster as I became more accustomed to the handling

Too much comfort can lead to a sloppy feeling, but the handling is the right side of aggressive. Likewise, with an increase in tyre clearance quite often comes lengthened chainstays, but the chainstays on the Scultura are fairly short at 400mm, and so the wheelbase on this 52cm model is just 972mm.

The bike changes direction very quickly, which could easily be mistaken for nervousness, but it's still predictable enough for familiarity to grow quickly. With each ride I found myself attacking corners faster and faster as I became more accustomed to the bike's handling. Merida says this is down to the re-profiled tapered head tube, but I think it's just because it's a very well-balanced frame. The Scultura isn't just free speed uphill – it's free speed back down too.

I'd say that how much you enjoy the Scultura 9000 will be dependent on your pedalling style. If you spin a high cadence and winch your way up the mountains like Chris Froome, you'll love the Merida because it will give you that lightweight edge. But if you're the sort of person who likes to stick it in the big ring and try to bend the crank arms, this probably isn't the bike for you – the sluggishness in the face of pure brute force might well leave you feeling robbed.

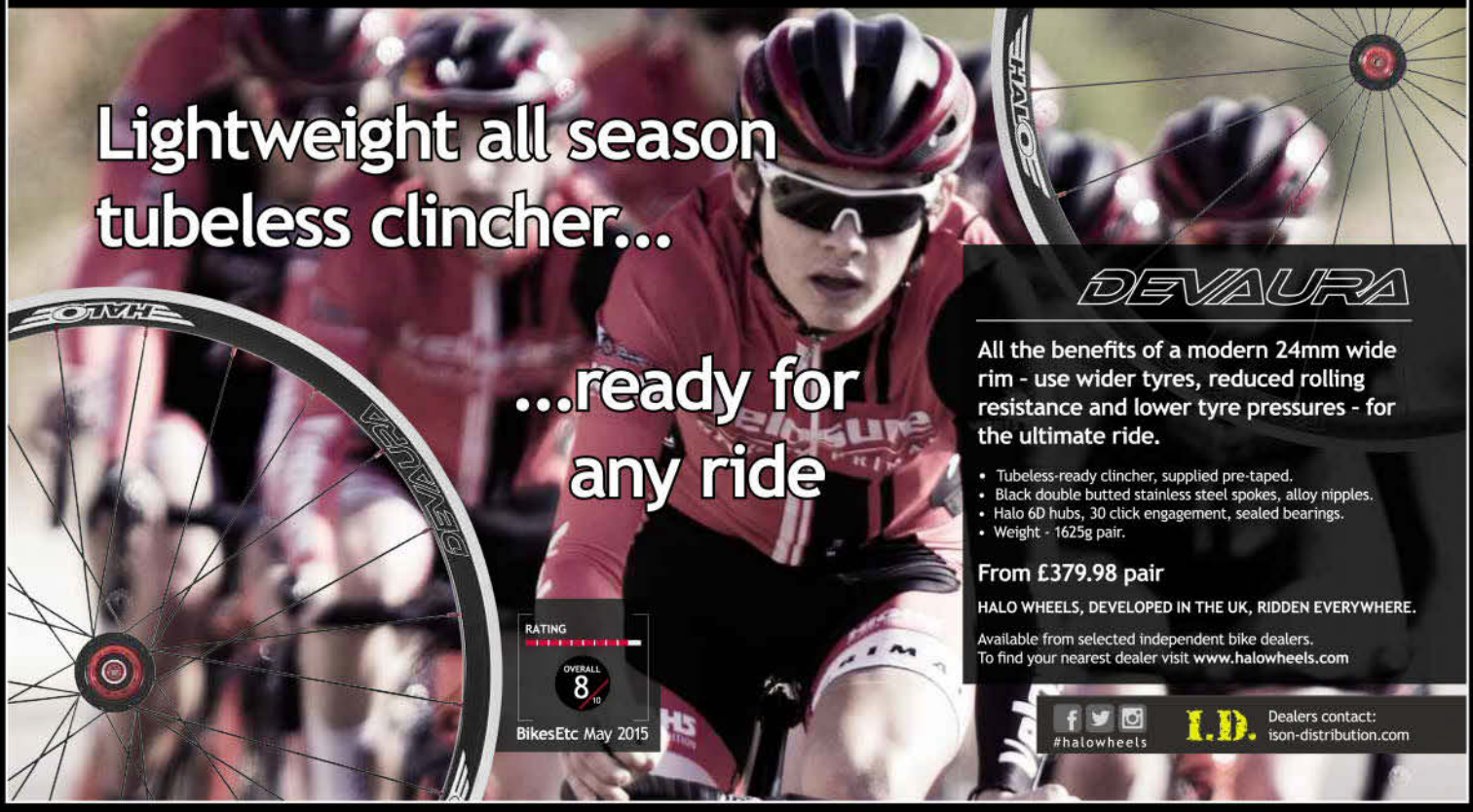
The detail



Sram's mechanical Red 22 groupset is regularly the go-to choice for manufacturers wishing to impress with the value on the scales as it still maintains the edge over its competitors where weight is concerned. It's the obvious choice then for the Scultura, but at the cost of a bit of a faux pas. It's an unwritten rule that groupsets should not be a mix-and-match affair, at least where the brand choice is concerned (maybe the Velominati might wish to add this to its current set of cycling laws), but the Scultura 9000 uses a direct mount rear brake, for which Sram does not currently make a compatible calliper, hence Shimano's Dura-Ace rear brake calliper has been substituted for stopping duties. At least it's hidden out of plain sight, behind the bottom bracket shell.

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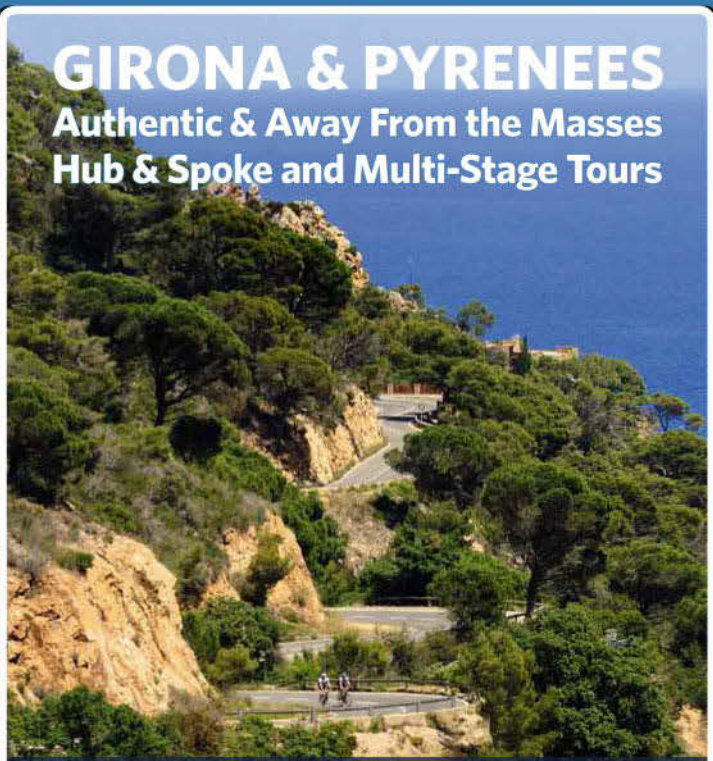
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Festka Doppler

Czech brand Festka turns the idea of the carbon/titanium bike on its head



Words **PETER STUART**



THE SPEC

Model
Festka Doppler

Groupset
Campagnolo Super Record

Deviations
None

Wheels
Campagnolo Bora 30 Clincher

Finishing kit
3T Ergonova Team bar, 3T Arx LTD carbon stem, Selle San Marco Regale Carbon FX saddle

Weight
7.1kg

Price
€5,299 (£3,875) frameset, approx £6,700 as tested

Contact
festka.com

Festka likes to think differently. That much is clear from the outlandish paintjobs on some of its bikes, with striking cubist motifs and loud colour contrasts that will leave you either shielding your eyes or reaching for your wallet. With the Doppler, however, Festka has shown that the brand's innovation penetrates deeper than the lacquer. The Czech outfit has used different materials in a different way to create a very different bike.

It's not the first time we've seen carbon and titanium combined on a frame – the likes of Independent Fabrication, Seven and Legend (featured last issue) have all done so – but Festka has inverted the concept. While those other brands use carbon tubes connected by titanium lugs, Festka has opted for titanium tubes bonded with carbon joints.

'Others connect the carbon tubes with a titanium lug, which in our understanding of the material is the wrong way round,' says Festka founder Ondřej Novotný. 'Bikes need to be stiff in the head tube area and in the junctions, which is not easily achieved with titanium. That's why we used the less stiff material [titanium] on the tubes where you need more compliance. Using carbon joints means the down tube and the top tube still have a really stiff connection to the head tube and the bottom bracket.'

Just as with the Festka One (reviewed in issue 33), production takes place entirely within the Czech Republic. The tubing is bought pre-made from Reynolds, but Festka then makes a few alterations. As well as mitring the tubes, Festka undertakes an unusual modification to the titanium (also used for its Asphalt frame) by slightly squashing the top tube. The reason is that an oval tube offers more lateral stiffness. Complementing this is the introduction of Doppler effect optical illusion-style vertical circles on the top tube, from which the bike takes its name.

The Doppler's looks drew a number of compliments during my first ride, from other cyclists, pedestrians



SEAT TUBE

Festka has used a carbon seat tube for the Doppler to increase stiffness of the frame and resist the twisting forces emanating from the bottom bracket. For the junctions between titanium and carbon, Festka has wrapped layers of carbon prepreg to lock the tubes in place.

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cannondale cervélo PINARELLO STORCK

It isn't a bike that glides, but the Festka Doppler strides confidently over any terrain





CABLING
Given the complexity of the bike's design, it's no surprise that Festka kept things simple with external cabling, but any home mechanic will be glad for the ease of maintenance. The titanium seatstays (right) are beautifully constructed but should also increase compliance.

and even van drivers. And the aesthetics only get better when the frame is inspected in detail, especially the perfectly crafted titanium dropouts and the smoothness of the joints. It's certainly a beautiful bike, but at this price it needs to deliver performance to match its looks if it is going to hold its own in a competitive market.

The Doppler effect

Ahead of my first ride on the Doppler I had a final ride on the Pinarello Dogma F8 before it was returned to the Italian mothership. The F8 has many merits, but it could be accused of being on the harsh side, so I was a little surprised when switching to the Doppler that it felt every bit as harsh as the F8, if not more so. Indeed, the Doppler moniker seemed appropriate if only because the bike rattled me into a state of visual distortion.

In fairness, that first impression was slightly skewed by the choice of saddle. The Selle San Marco Regale Carbon FX may be a good fit for a certain anatomy, but for me its flat shape and thin padding created a harsh and unforgiving feeling from the road. In fact, on my first long ride on the bike I returned home with noticeable pain in the backside.

Once I switched saddles the ride was more comfortable, but it still felt robust. Usually I favour a stiff ride as it assures me that little energy is being lost to flex and I'm getting the maximum rewards in terms of speed. Certainly the Doppler felt fast. The data seemed to support that impression too, as I recorded my fastest-ever time up my favoured local climb thanks to the bike's solid build and low overall weight.

Despite the harsh response from the road, the Doppler was surprisingly sturdy over cobbles or gravel. It rumbled a bit, but the handling remained decisive, and I began to think that something about the construction of the bike meant that it was more disturbed by small imperfections in the road than by seriously rough surfaces. It isn't a bike that glides, but it strides confidently over any terrain.

While I grew to appreciate the Doppler's fast, racy persona, I began to wonder whether I would continue to enjoy it over many years of ownership. After all, this is the kind of bike that you would want to last you a lifetime and, if it were my bike, it may become a little overwhelming in two decades' time when my race impulses have cooled down. But of course in the world of custom frames, nothing is set in stone.





HEAD TUBE
A carbon fibre head tube is then wrapped with more carbon fibre to form the junctions with the top tube and down tube. Below: The seatmast has a few centimeters of adjustment in it, but for the purposes of resale, it can be cut and a normal removable post can be inserted.

The handling was well-tuned, making the bike responsive on tight corners and fast descents

'Basically we can do any customisation that might be desired by a client. There is nothing pre-cooked,' Novotný says. 'What we did recently with some clients is that we made the standard build and we took it to the client to test the bike and asked him if he wanted to make it more stiff or if he was fine with it. It's like using a tailor.'

Have it your way

The bike Festka presented to us for testing proved to be stiff and harsh, but I'm confident that Novotný could tune it accurately to any customer's desire. Of course, that makes any review of limited relevance as no two bikes will be quite the same, but Novotný does nudge customers towards accepting the geometry he suggests.

'We manage to persuade the customers to choose our standard geometries not because it's easier for us but because it's what we think works best,' says Novotný. 'Of course, we are open if a customer comes in and wants something different.'

My test ride showed that the geometry presented an excellent balance between an aggressive front-end position and a saddle drop that is manageable enough for all-day riding. Handling was also well-tuned, making the bike responsive on tight corners and fast descents.

While the Doppler is extremely impressive as it is, in order to become a bike I would want for life I would need to ask Festka to retain all the stiffness and speed while introducing elements of comfort into the ride – a tricky juggling act, but one that's increasingly performed by top brands. Given the expertise of the team at Festka, I'm confident they could do exactly that.

Even as things stand, though, the Doppler is certainly an exceptional custom bike. It's a thing of beauty, a product of a creative mind, and also, as a bonus, a bike that rides extremely well.



The detail



Festka is eager to point out that these are not 'carbon lugs'. The carbon pieces are not pre-fabricated before the bike is put together, but instead are wrapped around the titanium tubes. 'There's a head tube that is carbon and a seat tube that is carbon as well. These joins are then wrapped with sheets of carbon fibre, which is all laid up in Prague,' says Novotný. The frame is therefore more than just a set of titanium tubes slotted into carbon joints, but rather is a composite of carbon and titanium, with the aim of reaping the best of both worlds – the compliance of titanium and stiffness of carbon. It's a bold tactic, and something we may see more of in the future.

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Words ***STU BOWERS***

The Obermayer name is only given to the very best and lightest wheels that Lightweight produces, in honour of the man who first created this unique full carbon wheelset.

In the beginning, Heinz Obermayer made each wheel by hand in his garage at home, at a rate of just one wheel a day. His method was far from sophisticated – he cured his carbon with a contraption made from parts of an old lorry heater and he used his experience and feel, not hi-tech equipment, to produce some of the best wheels on the planet. They soon caught the attention of the world's top riders and demand quickly outstripped supply. Apparently Lance Armstrong, at his peak, requested several sets, and Obermayer responded that, not only would Armstrong have to pay full price for them, but he would have to wait in line like everyone else.

Today each Lightweight wheel is still handmade, only at a considerably faster rate and without involving lorry heaters. The Meilenstein Obermayer is the cream of the company's road wheel crop.

It's only money

Let's be honest, if you're in the market for a pair of wheels costing north of £4,000, chances are you know a bit about the Lightweight brand already. What you might have noticed is that the wheels don't appear to have



THE DETAILS

Weight
948g pair (417g front, 531g rear)

Rim Depth
47.5mm rear, 47.5mm front

Rim Width (external)
20mm

Spoke Count
20 rear, 16 front

Price
£4,199

Contact
lightweight.info



I noticed immediately that accelerating and climbing took less effort, and not just by a small percentage

changed a great deal in the last decade, and that's not far from the truth. It's more a testament to Obermayer being ahead of his time, rather than the company resting on its laurels, but of course there have been subtle tweaks, meaning these wheels are the lightest yet.

When we weighed them, our scales read 948g (417g front, 531g rear) making the pair lighter than some high-end rear wheels alone. Wheelsets weighing less than a kilo are rare, and often impose rider weight limits. There *is* a rider weight limit recommended for the Meilenstein Obermayers, but it's 90kg, so we're not talking about flimsy wheels for 60kg climbers here.

What stands Lightweight apart is its unique construction, where spokes pass from one side of the rim to the other, in one length, wrapping into the hub flange and with the fibres at each end then woven and bonded directly into the rim construction. This, Lightweight claims, creates the stiffest interface possible and is far more suitable for carbon structures than drilling (or forming) holes and inserting metal spoke nipples. It means the rims, spokes and hubs effectively become a single piece, and allows for much higher spoke tensions.

This latest version has a slightly revised rim profile, but essentially it's still a V-shape (although now with a slightly blunter edge) which might feel outdated in view of the current trend for wider, rounder rims shapes. Lightweight claims it is not interested in chasing the Zipps and Enves of the world in the wind-tunnel. It insists this rim shape is best for what it's striving for: low weight and high stiffness.

Wow factor

When you slot a set of Meilenstein Obermayers in your bike, even if your previous wheels were considered high-end, you'll probably knock half a kilo off the rotating mass. Add in the impressive lateral rigidity and the payout is instantly gratifying.

I noticed immediately that accelerating and climbing took less effort, and not just by a small percentage. The difference was significant. Thankfully too, with the supplied SwissStop pads, this latest version has improved braking performance over its predecessor (upon which I once had a few scary moments on a rain-drenched mountain). It's still not quite as reassuring as I'd like in the wet, but some of the grabbiness of old had gone, replaced by a more progressive, predictable braking feel.

So what's the catch? Well, there is of course the cost, but let's for one moment imagine you've just won the lottery and money is no object. If you're a devout aero nut, you might look elsewhere. It's not that the Meilensteins aren't aero – they're just not the *most* aero. Another downside is that the Meilensteins are not particularly robust, and a crash could leave you with a hefty replacement bill. Lightweight is aware of this risk, and so has come up with its own insurance policy to give you peace of mind. A one-off £320 payment covers you for three years for repairs, or if damage is catastrophic, up to two complete wheel replacements free of charge.

If these still aren't quite fancy enough for you, there is the Schwarz edition, with Ceramic Speed bearings and stealthy all-black graphics for another £380. If your pockets are deep enough, you won't be disappointed.



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The boys are back in town

As Cav gets the HTC band back together, Felix Lowe gets a whiff of nostalgia

Guess who just got back today? Those wild-eyed boys that had been away. Haven't changed, haven't much to say. But man, I still think those cats are great.

Dimension Data – the new incarnation of the team formerly known as MTN-Qhubeka – clearly shares Thin Lizzy's excitement about the prospect of getting the band back together. From Britpop's Blur to paranormal paranoiacs Mulder and Scully, reunions are all the rage right now. If it works for Gary Kemp two decades on, then why not for Mark Cavendish's Spandex ballet of HTC lead out men just five years after their greatest hits?

The South African Pro-Continental team are clearly banking on cool cat Cav (wild-eyed for sure, but is his greatness on the wane?) hitting the right notes when HTC meets MTN to create DDD – co-sponsor Deloitte will pay the wages of the Manx Missile and his entourage.

But can friends reunited Bernie Eisel and Mark Renshaw get Cav back to winning ways alongside another old teammate, Edvald Boasson Hagen? Given Cavendish's (at times literally) nosediving form during his last two years at Etixx-Quick-Step, it's a big ask. For all the fanfare, this reunion could be less Take That and more Spice Girls – with the increasingly out-of-tune Matt Goss assuming the role of the absent Posh. While the old HTC line-up attempts to rediscover its magic, Goss will be looking to find his own voice at British Continental team One Pro Cycling where, if all else fails, he and fellow Aussie Steele Von Hoff can discuss their nation's hopes of regaining the Ashes with team owner Matt Prior, the cricketer-cum-cyclist.

Replacing Cav at Etixx is a rider who, like his predecessor, picked up but one miserly WorldTour win last season. So woeful was Marcel Kittel's form after a debilitating illness that his Giant-Alpecin team rescinded the contract of the one man who stood to gain most from using caffeine shampoo.

The battle between Cav and Kittel may be one of the main subplots of next season. At times last year MTN looked like a supermarket bargain shelf of products well beyond their sell-by date. With Cav on board, perhaps the team – even Tyler Farrar – will soon taste the difference.

Sticking with the supermarket theme, Etixx have snared Lidl in a deal that presumably includes naming rights on musettes and bidons. Kittel will be joined by Dan Martin, moving over from Cannondale-Garmin, as well as rangy Bob Jungels, joining from Trek (every little helps). In an exchange for Martin, Cannondale will take Rigoberto Uran from Etixx, and in a buy-one-get-one-free offer on climbers, will also welcome Pierre Rolland from Europcar.

That just leaves Dave Brailsford's troupe, who have managed to lure off-key former World Champion Michal Kwiatkowski from Etixx with the promise of a two-year Sky subscription. Dutch youngster Danny van Poppel will add zip in the sprints, while sonorous Spanish climbing duo Mikel Landa and Benat Intxausti should more than make up for the loss of Riche Porte to BMC.

Porte will test his mettle as a team leader, albeit one alongside the equally third-week-of-a-Grand-Tour-shy Tejay Van Garderen. It's like that moment in *X-Factor* when two singers with solo ambitions are thrust together by Simon Cowell to form a duo that everyone knows will crash and burn faster than you can say 'It's Chico Time'.

Porte's Sky fall marks the end of an era, the break-up of the team's one-directional approach to winning with Froome on lead vocals supported by metronomic melodies of Porte and Geraint Thomas. As for Cav, we'll have to wait and see if it results in green and another Paris victory. In the words of Thin Lizzy: 'It won't be long till the summer comes/Now that the boys are here again.' ●

Felix Lowe is a blogger for Eurosport and has contributed to the latest installment of Cycling Anthology *(Peloton Publishing)*

Illustration **Clear as Mud**

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